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=> FILE REG
FILE 'REGISTRY' ENTERED AT 11:43:48 ON 10 OCT 2008
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=> DISPLAY HISTORY FULL L1-

     FILE 'HCA' ENTERED AT 10:31:30 ON 10 OCT 2008
L1        259613 SEA (BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
                 OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY)(2A)(CE
                 LL OR CELLS) OR WETCELL? OR DRYCELL?)/BI,AB
L2          1574 SEA COMPOSITE#(5A)(POLYM? OR COPOLYM? OR HOMOPOLYM? OR
                 TERPOLYM? OR RESIN?)(5A)ELECTROLY?
L4         48494 SEA (PORO? OR MICROPORO? OR NANOPORO?)(2A)(FILM? OR
                 LAYER? OR COAT?)
L5         14940 SEA (PORO? OR MICROPORO? OR NANOPORO?)(2A)(POLYETHYLENE#
                 OR PE OR POLYPROPYLENE# OR PP OR POLYIMIDE# OR POLYSULFON
                 E# OR POLYURETHAN## OR URETHAN## OR POLYVINLY##(A)(CHLORI
                 DE# OR FLUORIDE#) OR PVC OR PVF OR CELLULOSE# OR NYLON#
                 OR POLYACRYLONITRILE# OR PTFE# OR POLYTETRAFLUOROETHYLENE
                 #)

     FILE 'REGISTRY' ENTERED AT 10:36:40 ON 10 OCT 2008
                 E SILICA/CN
L6             1 SEA SILICA/CN
                 E TALC/CN
L7             1 SEA TALC/CN
                 E ALUMINA/CN
L8             1 SEA ALUMINA/CN
                 E LITHIUM ALUMINUM OXIDE/CN
L9             1 SEA "LITHIUM ALUMINUM OXIDE (LIALO2)"/CN
                 E TITANIA/CN
L10            1 SEA TITANIA/CN

     FILE 'HCA' ENTERED AT 10:41:00 ON 10 OCT 2008
L11       834946 SEA L6 OR (SILICON OR SI)(W)(OXIDE# OR DIOXIDE#) OR SIO2
                 OR SILICA#
L12        51210 SEA L7 OR TALC#
L13       565489 SEA L8 OR (ALUMINUM# OR AL)(W)(OXIDE# OR TRIOXIDE#) OR
                 AL2O3 OR ALUMINA#
L14         1936 SEA L9 OR LIALO2 OR ALLIO2
L15       300386 SEA L10 OR (TITANIUM# OR TI)(W)(OXIDE# OR DIOXIDE#) OR
                 TIO2 OR TITANIA#
L16       130109 SEA ZEOLIT?
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L17             QUE LAMEL? OR LAMIN? OR MULTILAYER? OR MULTICOAT? OR
                MULTIFILM? OR (MULTI OR PLURAL? OR THREE OR TRIPL? OR
                TREBL? OR NUMEROUS? OR FEW OR SEVERAL OR MANY OR
                MANIFOLD? OR MULTIFOLD? OR MULTITUD?)(2A)(LAYER? OR
                COAT? OR FILM?)

     FILE 'HCAPLUS' ENTERED AT 10:43:42 ON 10 OCT 2008
L18       31872 SEA LEE Y?/AU
L19       29779 SEA KIM K?/AU
L20        1119 SEA RYU K?/AU
L21       10239 SEA CHANG S?/AU
L22          14 SEA L18 AND L19 AND L20 AND L21
     FILE 'HCA' ENTERED AT 10:50:57 ON 10 OCT 2008
L23       21551 SEA INORG?(2A)FILLER?
L24      518967 SEA MORPHOL?
L25       68710 SEA (DIFFER? OR VARY? OR VARIED OR VARIAB? OR DISPARAT?
                OR DISTINCT? OR CHANG? OR ALTER OR ALTERS OR ALTERRED OR
                ALTERING# OR ALTERRING# OR SEPARAT? OR SEP OR SEPN#)(2A)M
                ORPHOL?

     FILE 'HCA' ENTERED AT 11:02:21 ON 10 OCT 2008
L26       20242 SEA (PORO? OR MICROPORO? OR NANOPORO?)(2A)(POLYM? OR
                COPOLYM? OR HOMOPOLYM? OR TERPOLYM? OR RESIN?)
L27         985 SEA L1 AND L2
L28          55 SEA L27 AND L24
L29           6 SEA L28 AND L25
L30          10 SEA L28 AND (L4 OR L5 OR L26)
L31          17 SEA L28 AND ((L11 OR L12 OR L13 OR L14 OR L15 OR L16) OR
                L23)
L32           0 SEA L28 AND L17
L33       29718 SEA (POLYM? OR COPOLYM? OR HOMOPOLYM? OR TERPOLYM? OR
                RESIN?)(2A)ELECTROLY?
L34        1181 SEA L1 AND L33 AND L17
L35           9 SEA L34 AND L24
L36           2 SEA L34 AND L25
L37         153 SEA L34 AND (L4 OR L5 OR L26)
L38          99 SEA L34 AND ((L11 OR L12 OR L13 OR L14 OR L15 OR L16) OR
                L23)
L39          26 SEA L37 AND L38
L40       42507 SEA MICROSCAL? OR MICROSIZ? OR SUBMICRO?
L41             QUE MM OR MUM
L42           4 SEA L28 AND (L40 OR L41)
L43          15 SEA L37 AND (L40 OR L41)
L44           7 SEA L38 AND (L40 OR L41)
L45      185416 SEA (10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
                OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25)(A)L41
L46      325759 SEA (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9)(A)L41
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L47            2 SEA L28 AND (L45 OR L46)
L48            9 SEA L37 AND (L45 OR L46)
L49            4 SEA L38 AND (L45 OR L46)
L50           29 SEA L1 AND L33 AND L40
L51          707 SEA L1 AND L33 AND L41
L52            2 SEA L50 AND L24
L53            8 SEA L50 AND COMPOSITE#
L54           66 SEA L51 AND L17
L55            1 SEA L54 AND L24
L56           10 SEA L51 AND L24
L57            4 SEA L54 AND L2
L58           14 SEA L54 AND (L4 OR L5 OR L26)
L59            0 SEA L54 AND L25
L60            7 SEA L54 AND ((L11 OR L12 OR L13 OR L14 OR L15 OR L16) OR
                 L23)
L61           39 SEA L29 OR L35 OR L36 OR L42 OR L44 OR L47 OR L48 OR L49
                 OR L52 OR L53 OR L55 OR L60
L62           33 SEA (L30 OR L31 OR L43 OR L56 OR L58) NOT L61
L63           23 SEA L39 NOT (L61 OR L62)
L64           25 SEA 1808-2003/PY,PRY,AY AND L61
L65           14 SEA 1808-2003/PY,PRY,AY AND L62
L66           16 SEA 1808-2003/PY,PRY,AY AND L63
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=> FILE HCA
FILE 'HCA' ENTERED AT 11:43:58 ON 10 OCT 2008
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> D L64 1-25 BIB ABS HITSTR HITIND RE
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L64 ANSWER 1 OF 25 HCA COPYRIGHT 2008 ACS on STN

AN 142:97389 HCA Full-text

TI Preparation method of polymer electrolyte product for lithium polymer secondary battery and preparation method for the battery using the polymer electrolyte product

IN Do, Chil Hun; Jin, Bong Su; Jin, Chang Su; Mun, Seong In; Yoon, Mun Su

PA Korea Electro Technology Research Institute, S. Korea

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

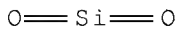
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2001090406	A	20011018	KR 2000-15364	20000325 <--

PRAI KR 2000-15364 20000325 <--

AB A method for prepg. the polymer electrolyte product for a lithium polymer secondary polymer and a method for prepg. the lithium polymer secondary polymer using the polymer electrolyte product are provided, to prevent the leakage of liq. electrolyte. The prepn. method of a polymer electrolyte product comprises the steps of: dissolving poly(vinyl chloride) as a matrix polymer into a first solvent, adding a plasticizer with high b.p., adding silica whose surface is coated with an org. material, and mixing them; coating the mixt. onto a substrate uniformly and drying it to make a polymer electrolyte film that the first solvent is removed; dipping the polymer electrolyte film into a second solvent that the plasticizer with high b.p. is dissolved and the matrix polymer is not dissolved, to remove only the plasticizer, and thereby making a polymer film with many micropores; and dipping the polymer film into a liq. electrolyte contg. lithium salts for allowing the liq. electrolyte to soak into the micropores, and thereby obtaining the polymer electrolyte product. Preferably the no. mean mol. wt. of poly(vinyl chloride) is 10,000-200,000; the particle size of silica is less than 1 . mu.m; the org. material is silane; the first solvent is tetrahydrofuran; the plasticizer is di-Bu phthalate or dioctyl phthalate; and the second solvent is methanol or Et ether.

IT 7631-86-9, Silica, uses
(silane-coated, composite with PVC/Lithium salt complexes; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)

RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST secondary lithium battery polymer electrolyte silica PVC porous composite
IT Membranes, nonbiological
(composite; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT Porous materials
(films; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT Secondary batteries
(lithium; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT Dissolution
(of polymer and plasticizers; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT Films
(porous; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT Plasticizers
Polymer electrolytes
(prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT 7439-93-2D, Lithium, salts
(composite with PVC/coated silica; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method of battery using polymer electrolyte product)
IT 9002-86-2
(d.p. 162-3247; prepn. method of polymer electrolyte product for lithium polymer secondary battery and prepn. method for battery using polymer electrolyte product)

IT   17341-24-1D, PVC complexes, uses
        (prepn. method of polymer electrolyte product
        for lithium polymer secondary battery and prepn. method
        of battery using polymer electrolyte
        product)
IT   60-29-7, Diethyl ether, uses   67-56-1, Methanol, uses   109-99-9,
     Tetrahydrofuran, uses
        (prepn. method of polymer electrolyte product
        for lithium polymer secondary battery and prepn. method
        of battery using polymer electrolyte
        product)
IT   84-74-2   117-81-7, Dioctyl phthalate
        (prepn. method of polymer electrolyte product
        for lithium polymer secondary battery and prepn. method
        of battery using polymer electrolyte
        product)
IT   7631-86-9, Silica, uses
        (silane-coated, composite with PVC/Lithium salt complexes; prepn.
        method of polymer electrolyte product for
        lithium polymer secondary battery and prepn. method of
        battery using polymer electrolyte
        product)
IT   7803-62-5, Silane, uses
        (silica coated with, composite with PVC/lithium salt
        complexes; prepn. method of polymer electrolyte
        product for lithium polymer secondary battery and
        prepn. method of battery using polymer
        electrolyte product)

L64 ANSWER 2 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN   141:382158 HCA Full-text
TI   Method of fabrication of single ion conductor-containing
     composite polymer electrolyte for
     lithium secondary battery
IN   Lee, Young Gi; Ryu, Kwang Sun; Chang, Soon Ho
PA   Electronics and Telecommunications Research Institute, S. Korea
SO   U.S. Pat. Appl. Publ., 10 pp.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040214089	A1	20041028	US 2003-750152	20031230

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     US 7211352            B2     20070501
     KR 2004092189         A      20041103   KR 2003-26420
                                                              200304
                                                              25
                                                   <--
     JP 2004327423         A      20041118   JP 2003-435912
                                                              200312
                                                              26
                                                   <--
     CN 1610170            A      20050427   CN 2003-10125473
                                                              200312
                                                              30
                                                   <--
     CN 1306644            C      20070321
     US 20050196677        A1     20050908   US 2005-97730
                                                              200504
                                                              01
                                                   <--
     US 7399556            B2     20080715
PRAI KR 2003-26420         A      20030425  <--
     US 2003-750152        A2     20031230  <--
     KR 2004-28470         A      20040424
```

AB Provided is a composite polymer electrolyte for a lithium secondary battery that includes a composite polymer matrix structure having a single ion conductor-contg. polymer matrix to enhance ionic cond. and a method of manufg. the same. The composite polymer electrolyte includes a first polymer matrix made of a first porous polymer with a first pore size; a second polymer matrix made of a single ion conductor, an inorg. material, and a second porous polymer with a second pore size smaller than the first pore size. The second polymer matrix is coated on a surface of the first polymer matrix. The composite polymer matrix structure can increase mech. properties. The single ion conductor-contg. porous polymer matrix of a submicro-scale can enhance ionic cond. and the charge/discharge cycle stability.

IC ICM H01M010-40

INCL 429309000; X42-931.4; X42-931.6; X42-931.7

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymer composite electrolyte lithium secondary battery

IT Ionomers
(fluoropolymers; method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT Fluoropolymers, uses

(ionomers; method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT Secondary batteries
(lithium; method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT Battery electrolytes
Composites
Pore size
(method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT Acrylic polymers, uses
Fluoropolymers, uses
Polyamide fibers, uses
Polyimides, uses
Polyoxyalkylenes, uses
Polysulfones, uses
Polyurethanes, uses
Zeolites (synthetic), uses
(method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT 9003-53-6, Polystyrene
(ionomer; method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT 79-41-4D, Methacrylic acid, alk. metal salt, copolymer ionomer with Me methacrylate 80-62-6D, Methyl methacrylate, alk. metal itaconate copolymer ionomer 80-62-6D, Methyl methacrylate, alk. metal maleate copolymer ionomer 80-62-6D, Methyl methacrylate, alk. metal methacrylate copolymer ionomer 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 97-65-4D, Itaconic acid, alk. metal salt, copolymer ionomer with Me methacrylate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 109-99-9, Thf, uses 110-16-7D, Maleic acid, alk. metal salt, copolymer ionomer with Me methacrylate 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethylacrylate 9003-32-1, Polyethylacrylate 9003-42-3, Polyethylmethacrylate 9003-49-0, Polybutylacrylate 9003-63-8, Polybutyl methacrylate 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0,

Hexafluoropropylene-vinylidene fluoride copolymer 13463-67-7, Titania, uses 14283-07-9, Lithium tetrafluoroborate 14807-96-6, Talc, uses 17347-75-0, Tungsten phosphate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25013-42-7, Molybdenum phosphate 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9, Lithium triflate 90076-65-6
(method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, Isopropyl alcohol, uses 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 872-50-4, n-Methylpyrrolidone, uses
(method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

IT 12003-67-7, Aluminum lithium oxide allio2
(γ-form; method of fabrication of single ion conductor-contg. composite polymer electrolyte for lithium secondary battery)

RE

(1) Abraham; US 5219679 A 1993 HCA
(2) Anon; J. Electrochem. Soc. 1995, V142(6), P1789
(3) Anon; www.osmolabstore.com
(4) Anon; www.smallparts.com/products/descriptions
(5) Gozdz; US 5296318 A 1994 HCA
(6) Munshi; US 6645675 B1 2003 HCA
(7) Tarascon; Solid State Ionics 1996, V86, P49

L64 ANSWER 3 OF 25 HCA COPYRIGHT 2008 ACS on STN

AN 141:382157 HCA Full-text

TI Method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery

IN Lee, Young Gi; Kim, Kwang Man; Ryu, Kwang Sun; Chang, Soon Ho

PA S. Korea

SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040214088	A1	20041028	US 2003-748363	

200312
29
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KR 2004092188 A 20041103 KR 2003-26419
200304
25
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JP 2004327422 A 20041118 JP 2003-431458
200312
25
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CN 1610169 A 20050427 CN 2003-10125472
200312
31
<--

PRAI KR 2003-26419 A 20030425 <--

AB A composite polymer electrolyte for a lithium secondary battery and a method of manufg. the same are provided. The composite polymer electrolyte includes a composite film structure which includes a first porous polymer film with good mech. properties and a second porous polymer film with submicro -scale morphol. of more compact porous structure than the first porous polymer structure, coated on a surface of the first porous polymer film, and an electrolyte soln. impregnated into the composite film structure. The different morphologies of the composite film structure enable to an increase in mech. properties and ionic cond. Furthermore, the charge/discharge cycle performance and stability of a lithium metal polymer secondary battery are enhanced.

IC ICM H01M010-40

INCL 429309000; 429316000; 429317000; 429314000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymer electrolyte different
morphol lithium secondary battery

IT Secondary batteries
(lithium; method of fabrication of composite
polymer electrolyte of different
morphologies for lithium secondary battery)

IT Battery electrolytes
Composites
Polymer morphology
(method of fabrication of composite polymer
electrolyte of different morphologies
for lithium secondary battery)

IT Acrylic polymers, uses
Fluoropolymers, uses
Polyamide fibers, uses

Polyimides, uses
Polyoxyalkylenes, uses
Polysulfones, uses
Polyurethanes, uses
Zeolites (synthetic), uses
(method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 109-99-9, Thf, uses 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethyl acrylate 9003-32-1, Polyethyl acrylate 9003-42-3, Polyethyl methacrylate 9003-49-0, Polybutylacrylate 9003-63-8, Polybutylmethacrylate 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12003-67-7, Aluminum lithium oxide allio2 13463-67-7, Titania, uses 14283-07-9, Lithium tetrafluoroborate 14807-96-6, Talc, uses 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9, Lithium triflate 90076-65-6
(method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 872-50-4, n-Methylpyrrolidone, uses
(method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery)

L64 ANSWER 4 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 141:210055 HCA Full-text
TI Porous electrode support made from carbon short fibers for solid polymer-type fuel cell and manufacture thereof
IN Nakamura, Makoto; Hayashi, Shoji; Sumioka, Kazuhiro
PA Mitsubishi Rayon Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

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     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
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PI   JP 2004235134        A     20040819   JP 2003-133579
                                                                  200305
                                                                  12
                                                      <--
PRAI JP 2002-350066       A     20021202  <--
AB   Disclosed is the porous electrode support comprising (a) a 1st porous
      electrode support which is made from carbon short fibers with the
      diam. 0.1-5 .mu.m and the length 0.2-9 mm randomly dispersed and
      bonded by carbon and (b) a 2nd porous electrode support which is made
      from carbon short fibers with the diam. 6-20 .mu.m and the length 3-
      20 mm randomly dispersed and bonded by carbon, both of which are
      laminated and integrated by carbon.  The support has good contact
      with the catalyst layer, and shows excellent mech. strength.
IC   ICM  H01M004-96
     ICS  H01M004-86; H01M004-88; H01M008-10
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST   porous electrode support carbon short fiber fuel cell;
     polymer electrolyte fuel cell
IT   7440-44-0, Carbon, uses   9002-89-5, VBP105-1   9003-35-4, Phenolite
     J325   25014-41-9, Polyacrylonitrile
        (porous electrode support made from carbon short fibers
        for solid polymer-type fuel cell)

L64  ANSWER 5 OF 25  HCA  COPYRIGHT 2008 ACS on STN
AN   140:96902  HCA  Full-text
TI   Procedure for the fabrication of rechargeable lithium polymer
     batteries
IN   Naarmann, Herbert; Kruger, Franz Josef
PA   Dilo Trading A.-G., Switz.
SO   Ger. Offen., 11 pp.
     CODEN: GWXXBX
DT   Patent
LA   German
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
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PI   DE 10231319          A1    20040122   DE 2002-10231319
                                                                  200207
                                                                  11
                                                      <--
     WO 2004008559        A2    20040122   WO 2003-EP7517
                                                                  200307
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WO 2004008559 A3 20050303

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RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003246680 A1 20040202 AU 2003-246680 20030710 <--

EP 1559155 A2 20050803 EP 2003-763813 20030710 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

US 20060032045 A1 20060216 US 2005-520972 20050719 <--

PRAI DE 2002-10231319 A 20020711 <--

WO 2003-EP7517 W 20030710 <--

AB Li polymer batteries were fabricated by a special procedure, new concepts, and with new components. The battery consists of anode, cathode and polymer electrolyte as separator, whereby the active masses are degassed and the used graphites for the anode masses were preferably modified by reaction with metal alkyls (e.g., with LiBu). The procedure according to invention is based on the coating and extrusion technol. with which all necessary components for the resp. electrodes and the separator are present as brushable, coatable and/or extrudable mixts. with solvent, conducting salt, additives and the active components (Li intercalating carbon or Li intercalating heavy metal oxides) and are processed during a continuous, preferably single-stage process, whereby monomers are polymd. and solidified. The mixts. are dispersions and/or brushable pastes, which are applied at room temp. on the collector (e.g. Cu film), coated with the anode mass (15-40 .mu.m), then with the separator, the cathode mass applied

(15-40 .mu. .m) and finally cathode grid aluminum film. The developed
connector system is laminated and wound, and encapsulated.

IT 1344-28-1, Alumina, uses 7631-86-9,
Silica, uses
(procedure for fabrication of rechargeable lithium polymer
batteries)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (CA INDEX NAME)

O=Si=O

IC ICM H01M010-02
ICS H01M004-36; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST battery lithium secondary fabrication

IT Optical imaging devices
(electrophoretic; procedure for fabrication of rechargeable
lithium polymer batteries)

IT Glycols, uses
(ethers; procedure for fabrication of rechargeable lithium
polymer batteries)

IT Ethers, uses
(glycol; procedure for fabrication of rechargeable lithium
polymer batteries)

IT Fibers
(hollow; procedure for fabrication of rechargeable lithium
polymer batteries)

IT Secondary batteries
(lithium; procedure for fabrication of rechargeable lithium
polymer batteries)

IT Carbon fibers, uses
(nanofibers; procedure for fabrication of rechargeable lithium
polymer batteries)

IT Electrophoresis apparatus
(optical imaging; procedure for fabrication of rechargeable
lithium polymer batteries)

IT Perfluoro compounds
(perfluoroalkyl ethers; procedure for fabrication of rechargeable
lithium polymer batteries)

IT Ethers, uses

(perfluoroalkyl; procedure for fabrication of rechargeable lithium polymer batteries)

IT Diodes
Sensors
(procedure for fabrication of rechargeable lithium polymer batteries)

IT Polyacetylenes, uses
(procedure for fabrication of rechargeable lithium polymer batteries)

IT Butyl rubber, uses
(procedure for fabrication of rechargeable lithium polymer batteries)

IT Polyolefins
(procedure for fabrication of rechargeable lithium polymer batteries)

IT Styrene-butadiene rubber, uses
(procedure for fabrication of rechargeable lithium polymer batteries)

IT 9010-85-9
(butyl rubber, procedure for fabrication of rechargeable lithium polymer batteries)

IT 9003-17-2
(of 1,2-configuration; procedure for fabrication of rechargeable lithium polymer batteries)

IT 109-72-8, Lithium butyl, processes
(procedure for fabrication of rechargeable lithium polymer batteries)

IT 463-79-6D, Carbonic acid, alkyl salt 1321-74-0, Divinylbenzene, uses 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9011-17-0, Kynar 2801 9033-83-4, Polyphenylene 11126-15-1, Lithium vanadium oxide 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 25067-58-7, Polyacetylene 30604-81-0, Polypyrrole 37296-91-6, Lithium molybdenum oxide 37349-20-5, Lithium tungsten oxide 39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium manganese oxide 51177-06-1, Chromium lithium oxide 51222-70-9, Lithium zirconium oxide 52627-24-4, Cobalt lithium oxide
(procedure for fabrication of rechargeable lithium polymer batteries)

IT 1304-28-5, Baria, uses 1309-48-4, Magnesia, uses 1318-00-9, Vermiculite 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 9002-88-4, Polyethylene 9003-29-6, Polybutene 9003-55-8, Styrene-butadiene copolymer 12627-14-4, Lithium silicate 13453-69-5, Lithium metaborate 18115-70-3, Lithium acetylacetonate, uses 24968-97-6,

Polypyrrolidone
(procedure for fabrication of rechargeable lithium polymer batteries)

IT 7440-37-1, Argon, uses
(procedure for fabrication of rechargeable lithium polymer batteries)

IT 9003-55-8
(styrene-butadiene rubber, procedure for fabrication of rechargeable lithium polymer batteries)

L64 ANSWER 6 OF 25 HCA COPYRIGHT 2008 ACS on STN

AN 140:29495 HCA Full-text

TI Heat-resistant multilayered ion exchange membranes, their manufacture, membrane electrode assemblies, and polymer electrolyte fuel cells

IN Miyake, Naoto

PA Asahi Kasei Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

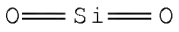
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003346837	A	20031205	JP 2002-153749 <--	20020528
	JP 4025582	B2	20071219		
PRAI	JP 2002-153749		20020528 <--		

AB The multilayer ion exchange membrane comprises (A) a composite layer having surface roughness of 0.001-8 . mu.m and consisting of 1-99 wt.% inorg. substances and 1-99 wt.% ion exchange resins and (B) an ion exchanger layer comprising 50-100 wt.% ion exchange resins. The inorg. substances may be metal oxides. The multilayer membranes are prepd. by contacting an ion exchange membrane (swelling ratio 100-170%) with a reactive soln. contg. metal alkoxides, for their hydrolysis and condensation polymn. Membrane electrode assemblies and polymer electrolyte fuel cells comprising the membranes are also claimed. The multilayer membranes show high proton cond. and excellent heat resistance.

IT 7631-86-9P, Silica, uses
(sol-gel formation of metal oxide layers on ion exchange membranes for heat-resistant membrane electrode assemblies in polymer electrolyte fuel cells)

RN 7631-86-9 HCA

CN   Silica (CA INDEX NAME)



IC   ICM H01M008-02
     ICS B01J047-12; C25B013-08; H01B001-06; H01B013-00; H01M008-10
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST   heat resistant multilayer ion exchange membrane;
     polymer electrolyte fuel cell ion
     exchange membrane; PEFC ion exchange membrane metal oxide composite;
     membrane electrode assembly ion exchanger metal oxide
IT   Membranes, nonbiological
        (heat-resistant, multilayered; sol-gel formation of
        metal oxide layers on ion exchange membranes for heat-resistant
        membrane electrode assemblies in polymer
        electrolyte fuel cells)
IT   Fuel cell electrodes
        (membrane electrode assemblies; sol-gel formation of metal oxide
        layers on ion exchange membranes for heat-resistant membrane
        electrode assemblies in polymer electrolyte
        fuel cells)
IT   Sulfonic acids, uses
        (perfluoro, membranes; sol-gel formation of metal oxide layers on
        ion exchange membranes for heat-resistant membrane electrode
        assemblies in polymer electrolyte fuel
        cells)
IT   Ion exchange membranes
     Sol-gel processing
        (sol-gel formation of metal oxide layers on ion exchange
        membranes for heat-resistant membrane electrode assemblies in
        polymer electrolyte fuel cells)
IT   Fuel cells
        (solid electrolyte, PEFC; sol-gel formation of metal
        oxide layers on ion exchange membranes for heat-resistant
        membrane electrode assemblies in polymer
        electrolyte fuel cells)
IT   Perfluoro compounds
        (sulfonic acids, membranes; sol-gel formation of metal oxide
        layers on ion exchange membranes for heat-resistant membrane
        electrode assemblies in polymer electrolyte
        fuel cells)
IT   632330-15-5, Aciplex S 1001X
        (membranes; sol-gel formation of metal oxide layers on ion
        exchange membranes for heat-resistant membrane electrode

assemblies in polymer electrolyte fuel
cells)

IT 78-10-4, Tetraethoxysilane 512-56-1, Trimethyl phosphate
(sol-gel formation of metal oxide layers on ion exchange membranes for heat-resistant membrane electrode assemblies in polymer electrolyte fuel cells)

IT 1314-56-3P, Phosphorus oxide, uses 7631-86-9P, Silica, uses
(sol-gel formation of metal oxide layers on ion exchange membranes for heat-resistant membrane electrode assemblies in polymer electrolyte fuel cells)

L64 ANSWER 7 OF 25 HCA COPYRIGHT 2008 ACS on STN

AN 139:338510 HCA Full-text

TI Thick lamellar textures and high ambient conductivity in de-blended mixtures of low-dimensional systems of two polymers and Li salts

AU Chia, F.; Zheng, Y.; Liu, J.; Reeves, N.; Ungar, G.; Wright, Peter V.

CS Department of Engineering Materials, The University of Sheffield, Sheffield, S1 3JD, UK

SO Electrochimica Acta (2003), 48(14-16), 1939-1951
CODEN: ELCAAV; ISSN: 0013-4686

PB Elsevier Science Ltd.

DT Journal

LA English

AB The three-component low-dimensional polymer electrolyte complexes of blends of the amphiphilic helical polymer poly[2,5,8,11,14-pentaoxapentadecamethylene(5-hexadecyloxy- 1,3-phenylene)] (I), poly(tetramethylene oxide)-co-dodecamethylene (II), and LiClO4, LiBF4, and Li(CF3SO2)N were studied by polarized light optical microscopy, DSC and SAXS together with a.c. complex impedance measurements using ITO glass, silver, and lithium electrodes. In systems with LiClO4, a well-defined spherulitic morphol. with lamellae of 1-3 μ m in thickness were obsd. following heat treatment. The lamellae consist of de-blended polymer I:LiClO4 complex with polymer II forming an interlamellar ion-conducting layer. Complex impedance measurements with ITO and Ag electrodes indicate cond. σ .apprx. 10-3 S cm-1 with low temp. dependence at ambient to 100° and Z' vs. Z'' planes featuring a new small semicircle on de-blending consistent with a Maxwell series layered dielec. system. A galvanic cell with LiCoO2 composite cathode discharged at 20° with c.d. of 0.1 mA cm-2. In corresponding systems with LiBF4, blocks of lamellae sep. from a blended matrix which give temp.-dependent a.c. cond. The d.c. polarization of LiBF4 based systems between Li electrodes generated cond. of 10-3-10-2 S cm-1 in good accord with a.c. impedance measurements. Long spacings from SAXS measurements

indicate the I-salt occupancy in blends with various salts, which correlates with de-blending.
CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 72
ST polyoxyalkylene hexadecyloxyphenylene lithium salt lamellar structure cond; amphiphilic polyether dodecamethylene lithium salt polymer electrolyte spherulitic morphol; polarization lithium salt polyether electrolyte lamellar texture deblending
IT Polymer chains
(conformation, helical; lamellar texture and high ambient temp. cond. of de-blended mixts. of low-dimensional polyoxyalkylenes and lithium salts)
IT Amphiphiles
Dielectric polarization
Electric conductivity
Polymer electrolytes
(lamellar texture and high ambient temp. cond. of de-blended mixts. of low-dimensional polyoxyalkylenes and lithium salts)
IT Polyoxyalkylenes, properties
(lamellar texture and high ambient temp. cond. of de-blended mixts. of low-dimensional polyoxyalkylenes and lithium salts)
IT Polymer morphology
(spherulitic; lamellar texture and high ambient temp. cond. of de-blended mixts. of low-dimensional polyoxyalkylenes and lithium salts)
IT 7439-93-2D, Lithium, complexes with polyoxyalkylenes 7791-03-9, Lithium perchlorate ($LiClO_4$) 14283-07-9 90076-65-6, Lithium triflimide 159646-65-8D, lithium complexes 180862-30-0D, lithium complexes 441286-65-3D, 1,12-Dibromododecane-dichloromethane-tetrahydrofuran copolymer, lithium complexes
(lamellar texture and high ambient temp. cond. of de-blended mixts. of low-dimensional polyoxyalkylenes and lithium salts)
RE

(1) Andreev, Y; Electrochim Acta 2000, V45, P1417 HCA
(2) Armand, M; Fast Ion Transport in Solids 1979, P131 HCA
(3) Armand, M; Polymer Electrolyte Reviews 1987, V1
(4) Bonanos, N; Impedance Spectroscopy (Chapter 4) 1987
(5) Cameron, G; Polymer Electrolyte Reviews 1989, V2
(6) Chatani, Y; Polymer 1987, V28, P1815 HCA
(7) Chia, F; Solid State Ionics 2002, V147, P275 HCA
(8) Dias, F; J Chem Soc Faraday Trans 1996, V92, P2599 HCA
(9) Dias, F; Macromol Rapid Commun 1994, V15, P961 HCA
(10) Dias, F; Solid State Ionics 1996, V85(1-4), P43 HCA

(11) Fenton, D; Polymer 1973, V14, P589 HCA
(12) Gadjourova, Z; Nature 2001, V412, P520 HCA
(13) Goodenough, J; Solid State Electrochemistry (Chapter 3) 1995
(14) Gray, F; Polymer Electrolytes (Chapter 1) 1997
(15) Imrie, C; Adv Mater 1999, V11, P832 HCA
(16) Imrie, C; Mol Cryst Liq Cryst 2000, V347, P199 HCA
(17) Johansson, P; Polymer 2001, V42, P6573 HCA
(18) Kuratomi, J; J Power Sources 2001, V97-98, P801 HCA
(19) Lightfoot, P; Science 1993, V262, P883 HCA
(20) Prosini, P; J Power Sources 2001, V97-98, P786 HCA
(21) West, A; Solid State Electrochemistry (Chapter 1) 1995
(22) Wright, P; Br Polym J 1975, V7, P319 HCA
(23) Wright, P; Polym Int 1998, V47, P34 HCA
(24) Zheng, Y; Chem Commun 2000, P1459 HCA
(25) Zheng, Y; Electrochim Acta 2000, V45, P1161 HCA
(26) Zheng, Y; Electrochim Acta 2001, V46, P1397 HCA
(27) Zheng, Y; J Mater Chem 2000, V10, P69 HCA
(28) Zheng, Y; J Power Sources 2001, V97-98, P641 HCA

L64 ANSWER 8 OF 25 HCA
AN 139:294451 HCA Full-text
TI Thermal, electrical, and mechanical properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler
AU Wen, Zhaoyin; Itoh, Takahito; Uno, Takahiro; Kubo, Masataka; Yamamoto, Osamu
CS Faculty of Engineering, Department of Chemistry for Materials, Mie University, 1515 Kamihama-cho, Mie, 514-8507, Japan
SO Solid State Ionics (2003), 160(1,2), 141-148
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB A fully amorphous cross-linked poly(ethylene oxide-co-propylene oxide) (poly(EO/PO)) polymer electrolyte was prepd. by chem. crosslinking reaction of a macro-monomer, poly(ethylene oxide-co-propylene oxide) with trifunctional cross-linkable acryloyl groups at the macro-monomer chain end. The lithium salt $LiN(CF3SO2)2$ ([Li]/[O] = 1/16) and ceramic fillers such as $BaTiO3$ and γ-$LiAlO2$ adopted in the polymer electrolyte could maintain the fully amorphous feature of the polymer matrix. The submicron and nano-sized $BaTiO3$ fillers slightly decreased the thermal decompn. temp. of the polymer matrix, while the nano-sized γ-$LiAlO2$ filler improved to some extent the thermal stability of the polymer matrix. Both nano-sized $BaTiO3$ and γ-$LiAlO2$ fillers increased the ionic cond. of the cross-linked poly(EO/PO)/$LiN(CF3SO2)2$ electrolyte and the highest conductivities of 5.67 + 10-5 S/cm at 30° and 5.76 + 10-4 S/cm at 80°, resp., were

obtained for the composite polymer electrolytes with 10 wt. % γ-$LiAlO_2$ filler. However, the submicron $BaTiO_3$ filler, regardless of its content, decreased the ionic cond. Addn. of ceramic fillers, esp. the nano-sized $BaTiO_3$ and γ-$LiAlO_2$, was effective in improving the mech. strength and elasticity of the fully amorphous composite polymer electrolytes over a wide temp. range.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST thermal elec mech composite polymer electrolyte crosslinked ceramic filler; poly ethylene oxide propylene oxide lithium secondary battery electrolyte

IT Electric resistance
(change during prolonged compression; thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT Elongation at break
Particle size
(effect of filler particle size and filler content on thermal decompn. temp., mech. properties, and ionic cond. of composite electrolytes)

IT Ionic conductivity
(effect of filler particle size on thermal decompn. temp., mech. properties, and ionic cond. of composite electrolytes)

IT Fillers
(effect of wt. % in composite polymer electrolytes; thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT Secondary batteries
(lithium; thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT Thermal decomposition
(of composite electrolytes above 250°; thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT Battery electrolytes
Composites
Crosslinking
Elasticity
Linear-sweep voltammetry
Polymer electrolytes
Tensile strength

(thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT 9003-11-6DP, acryloyl end-capped
(EO/PO 4/1, d.p. of PO ~34, crosslinked composites with LiTFSI and filler; thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
(LiTFSI, composite electrolytes with filler and crosslinked P(EO-PPO); thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT 12003-67-7, Aluminum lithium oxide (AlLiO2) 12047-27-7, Barium titanate (BaTiO3), uses
(composite electrolytes with LiTFSI and crosslinked P(EO-PPO); thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

IT 78-67-1, AIBN
(thermal, elec., and mech. properties of composite polymer electrolytes based on cross-linked poly(ethylene oxide-co-propylene oxide) and ceramic filler)

RE
(1) Alamgir, M; J Electrochem Soc 1993, V140, PL96 HCA
(2) Bennett, J; Chem Mater 1989, V1, P14 HCA
(3) Borghini, M; J Electrochem Soc 1995, V142, P2118 HCA
(4) Capuano, F; J Electrochem Soc 1991, V138(7), P1918 HCA
(5) Croce, F; Nature 1998, V394, P456 HCA
(6) Evans, J; Polymer 1987, V28, P2324 HCA
(7) Kim, Y; Electrochim Acta 2000, V45, P1473 HCA
(8) Koksbang, R; Solid State Ionics 1994, V69, P320 HCA
(9) Kono, M; J Electrochem Soc 1999, V146, P1626 HCA
(10) Kumar, B; Solid State Ionics 1999, V124, P239 HCA
(11) Maccallum, J; Solid State Ionics 1984, V11, P307 HCA
(12) Matoba, Y; Solid State Ionics 2002, V147, P403 HCA
(13) Moon, S; J Power Sources 2000, V87, P223 HCA
(14) Nan, C; Mater Sci Eng, B 1991, V10, P99
(15) Nishimoto, A; Macromolecules 1999, V32, P1514
(16) Przluski, J; Electrochim Acta 1995, V40, P2101
(17) Quartarone, E; Solid State Ionics 1998, V110, P1 HCA
(18) Sun, H; J Electrochem Soc 1999, V146, P1672 HCA
(19) Sun, H; J Electrochem Soc 2000, V147, P2462 HCA
(20) Swierczynski, D; Chem Mater 2001, V13, P1560 HCA

(21) Takeuchi, T; Solid State Ionics 1995, V79, P325 HCA
(22) Takeuchi, T; Solid State Ionics 1996, V89, P345 HCA
(23) Vincent, C; Solid State Ionics 2000, V134, P159 HCA
(24) Watanabe, M; Solid State Ionics 1995, V79, P306 HCA
(25) Wen, Z; J Power Sources 2000, V90, P20 HCA
(26) Weston, J; Solid State Ionics 1982, V7, P81 HCA

L64 ANSWER 9 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 139:279054 HCA Full-text
TI Manufacture of porous diffusion electrode for solid polymer electrolyte fuel cell
IN Harada, Keizo; Mizuno, Osamu
PA Sumitomo Electric Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003272638	A	20030926	JP 2002-76140 <--	20020319
	JP 3922056	B2	20070530		
PRAI	JP 2002-76140		20020319 <--		

AB The porous diffusion electrode is comprised of a porous metal substrate of a networked pore structure with an av. pore size of 50 .mu.m-1 mm, and a laminated porous org. film with good water repellency. Multiple protrusions on the metal substrate piece through the org. film for increased cond. The metal porous material is made of Fe-Cr or Ni-Cr alloy with addn. of C, Ni, Mo, Cu, B, Al, Si, and/or Ti.
IC ICM H01M004-86
ICS B32B005-32; B32B015-08; C22C019-05; C22C038-00; C22C038-22; C25B011-03; H01M008-10
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST porous diffusion electrode fuel cell cond lamination water repellency
IT Lamination
(for manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT Electrodes
(gas-diffusion; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT Electrodes

Fuel cells
Porous materials
(manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT Electric conductivity
(of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT Fluoropolymers, uses
(org. porous film; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT Ionomers
(polyoxyalkylenes, fluorine- and sulfo-contg., electrolyte; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT 7440-06-4, Platinum, uses
(catalyst; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)
IT 7440-44-0, Carbon, uses
(catalytic support; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell
)
IT 11149-25-0 606093-29-2, Chromium 25, iron 69, molybdenum 6
606093-30-5, Chromium 30, iron 60, molybdenum 6, nickel 4
606093-31-6, Chromium 28, copper 0.5, iron 68, molybdenum 4
606093-32-7, Boron 1.5, chromium 28, iron 65, molybdenum 6
(electrode substrate; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell
)
IT 9002-84-0, PTFE
(org. porous film; manuf. of porous diffusion electrode for solid polymer electrolyte fuel cell)

L64 ANSWER 10 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 138:15185 HCA Full-text
TI Electrochemical properties and interfacial stability of (PEO)10LiCF3SO3-TinO2n-1 composite polymer electrolytes for lithium/sulfur battery
AU Shin, J. H.; Kim, K. W.; Ahn, H. J.; Ahn, J. H.
CS Engineering Institute, Advanced Materials Research Center, Department of Metallurgical and Materials Engineering, Gyeongsang National University, Jinju, 660-701, S. Korea
SO Materials Science & Engineering, B: Solid-State Materials for Advanced Technology (2002), B95(2), 148-156
CODEN: MSBTEK; ISSN: 0921-5107
PB Elsevier Science B.V.

DT Journal
LA English
AB Electrochem. properties and interfacial stability of (PEO)10LiCF3SO3 composite polymer electrolytes (CPEs), with titanium oxide (TinO2n-1, n = 1, 2) prepd. by ball milling as a ceramic filler, are presented. The titanium oxide content of the (PEO)10LiCF3SO3 polymer electrolyte was 5-15 wt.%. The addn. of titanium oxide, which had plate-like spherical shapes with sizes ranging from submicron to several microns, increases the ionic cond. by an order of magnitude compared to (PEO)10LiCF3SO3 polymer electrolyte without titanium oxide. The modified electrolyte also has a higher ionic cond. at low temp. Li/CPEs/50% S cells have initial discharge capacities of 1400 - 1600 mA-h/g sulfur at a current of 100 mA/g sulfur at 90°. These cells also have a higher initial charge/discharge performance than those without titanium oxide. The interfacial stability was also improved by the addn. of titanium oxide to the (PEO)10LiCF3SO3 polymer electrolyte .
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST polyoxyethylene lithium triflate titanium oxide composite polymer electrolyte; lithium sulfur battery composite polymer electrolyte
IT Battery electrolytes
Secondary batteries
(electrochem. properties and interfacial stability of (PEO)10LiCF3SO3-TinO2n-1 composite polymer electrolytes for lithium/sulfur batteries)
IT Polyoxyalkylenes, uses
(lithium complexes; electrochem. properties and interfacial stability of (PEO)10LiCF3SO3-TinO2n-1 composite polymer electrolytes for lithium/sulfur batteries)
IT 1344-54-3, Titanium oxide (Ti2O3) 7439-93-2D, Lithium, poly(ethylene oxide) complexes 12035-94-8, Titanium oxide (Ti2O) 12137-20-1, Titanium oxide (TiO) 25322-68-3D, Poly(ethylene oxide), lithium complexes 33454-82-9, Lithium trifluoro methanesulfonate
(electrochem. properties and interfacial stability of (PEO)10LiCF3SO3-TinO2n-1 composite polymer electrolytes for lithium/sulfur batteries)
RE
(1) Bikbaeva, G; Russ J Electrochem Soc 1993, V29, P715
(2) Bruce, P; Solid States Ionics 1988, V28-30, P918
(3) Capeano, F; J Electrochem Soc 1991, V138, P1918
(4) Chu, M; US 5789108 1998 HCA
(5) Croce, F; Nature 1998, V394, P456 HCA
(6) Croce, F; Phil Mag 1989, VB59, P161

(7) Croce, F; Solid State Ionics 2000, V135, P47 HCA
(8) Evans, J; Polymer 1987, V28, P2324 HCA
(9) Fauteux, D; Solid State Ionics 1982, V7, P81
(10) Kato, Y; Solid State Ionics 1990, V40/41, P632
(11) Kim, J; The fourth Hawaii Battery Conference 2002, P273 HCA
(12) Krawiec, W; J Power Sources 1995, V54, P310 HCA
(13) Kumar, B; J Power Sources 1994, V52, P261 HCA
(14) Liang, C; J Electrochem Soc 1973, V120, P1289 HCA
(15) MacCallum, J; Polym Electrolyte Rev 1987, V1, P55
(16) Mamorstein, D; J Power Sources 2000, V89, P219
(17) Morita, M; Solid State Ionics 2000, V136-137, P1167 HCA
(18) Weston, J; Solid State Ionics 1982, V7, P75 HCA
(19) Wieczorek, W; Solid State Ionics 1989, V36, P225
(20) Yamin, H; J Electrochem Soc 1988, V135, P1045 HCA

AN 137:386936 HCA Full-text
TI A novel composite gel polymer electrolyte for rechargeable lithium batteries
AU Kuo, Han-Hsin; Chen, Wei-Chih; Wen, Ten-Chin; Gopalan, A.
CS Department of Chemical Engineering, National Cheng Kung University, Tainan, 701, Taiwan
SO Journal of Power Sources (2002), 110(1), 27-33
CODEN: JPSODZ; ISSN: 0378-7753
PB Elsevier Science B.V.
DT Journal
LA English
AB Composite polymer electrolyte (PE) films comprising of thermoplastic polyurethane (TPU) and polyacrylonitrile (PAN) (denoted as TPU-PAN) have been prepd. by two different processes. Scanning electron microscope (SEM) of the films reveal the differences in morphol. between them. The electrochem. properties of composite electrolyte films incorporating $LiClO_4$-propylene carbonate (PC) were studied. TPU-PAN based gel PE shows high ionic cond. at room temp. Thermogravimetric anal. informs that the composite electrolyte possesses good thermal stability with a decompn. temp. higher than 300 °C. Electrochem. stability in the working voltage range from 2.5 to 4.5 V was evident from cyclic voltammetry. Cycling performances of Li/PE/$LiCoO_2$ cells were also performed to test the suitability of the composite electrolyte in batteries.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery electrolyte polyurethane polyacrylonitrile
IT Battery electrolytes
(composite gel polymer electrolyte comprising of thermoplastic polyurethane and polyacrylonitrile for rechargeable lithium batteries)
IT Polyurethanes, processes

(composite gel polymer electrolyte
comprising of thermoplastic polyurethane and polyacrylonitrile
for rechargeable lithium batteries)

IT 108-32-7, Propylene carbonate 7791-03-9, Lithium perchlorate
25014-41-9, Polyacrylonitrile
(composite gel polymer electrolyte
comprising of thermoplastic polyurethane and polyacrylonitrile
for rechargeable lithium batteries)

RE

(1) Abraham, K; Electrochim Acta 1998, V43, P2399 HCA
(2) Andreev, Y; Electrochim Acta 2000, V45, P1417 HCA
(3) Appetecchi, G; Electrochim Acta 1995, V40, P991 HCA
(4) Appetecchi, G; J Power Sources 2001, V101, P42 HCA
(5) Choe, H; Electrochim Acta 1995, V40, P2289 HCA
(6) Croce, F; Electrochim Acta 1994, V39, P2187 HCA
(7) Dey, A; J Electrochem Soc 1970, V117, P222 HCA
(8) Fauteux, D; Electrochim Acta 1995, V40, P2185 HCA
(9) Fenton, D; Polymer 1973, V14, P589 HCA
(10) Huang, H; Electrochim Acta 1992, V31, P1671
(11) Huq, R; Electrochim Acta 1992, V37, P1681 HCA
(12) Kalhammer, F; Solid State Ionics 2000, V135, P315 HCA
(13) Kim, D; J Power Sources 1998, V76, P175 HCA
(14) Kim, D; Solid State Ionics 1998, V106, P329 HCA
(15) Kim, H; J Power Sources 1996, V62, P21 HCA
(16) Kleinberg, J; Inorganic Chemistry 1960, P550
(17) Liu, X; J Electrochem Soc 1997, V144, P3066 HCA
(18) Magistris, A; Polym Int 1992, V28, P277 HCA
(19) Peramunage, D; J Electrochem Soc 1995, V142, P1789 HCA
(20) Reimers, J; J Electrochem Soc 1992, V139, P2091 HCA
(21) Seki, M; Makromol Chem Macro Chem Phys 1992, V193, P2971 HCA
(22) Slane, S; J Power Sources 1995, V55, P7 HCA
(23) Tarascon, J; Solid State Inoics 1994, V69, P293 HCA
(24) Tarascon, J; Solid State Ionics 1996, V86-88, P49 HCA
(25) Vanheumen, J; Macromolecules 1995, V28, P4268 HCA
(26) Venkatasetty, H; J Power Sources 2001, V97/98, P671
(27) Wang, H; Macromolecules 2000, V33, P6910 HCA
(28) Wang, H; Macromolecules 2001, V34, P529 HCA
(29) Wen, T; J Appl Polym Sci 2000, V77, P680 HCA
(30) Wen, T; J Power Sources 2001, V92, P139 HCA
(31) Wen, T; Macromolecules 2001, V34, P2958 HCA

L64 ANSWER 12 OF 25 HCA COPYRIGHT 2008 ACS on STN

AN 137:127443 HCA Full-text

TI The influence of lithium ions on molecular interaction and conductivity of composite electrolyte consisting of TPU and PAN

AU Wen, Ten-Chin; Kuo, Han-Hsin; Gopalan, A.

CS Department of Chemical Engineering, National Cheng Kung University,

Tainan, 701, Taiwan
SO Solid State Ionics (2002), 147(1,2), 171-180
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB Investigation on new polymer electrolytes comprising of thermoplastic polyurethane (TPU) and polyacrylonitrile (PAN) and having different extent of Li+ ions has been made. Both solid and gelatinous polymer electrolytes were prepd. and studied. In order to interpret the changes in morphol. and cond. of the composite, Fourier-transform IR spectroscopy (FTIR) and AC impedance studies have been utilized. The FTIR spectral bands assocd. with NH and C:O groups of TPU were deconvoluted and used to obtain the modifications in mol. interactions. The swelling characteristics of the composite polymer in the liq. electrolyte were studied. By analyzing the FTIR spectrum of the gelled composite, the interaction of Li+ ion with C.tplbond.N groups in PAN was identified. The composite polymer electrolyte has sufficient electrochem. stability to allow safe operation in rechargeable lithium polymer batteries.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Secondary batteries
(lithium; the influence of lithium ions on mol. interaction and cond. of composite electrolyte consisting of TPU and PAN)
RE
(1) Abraham, K; US 5219679 1993 HCA
(2) Abraham, K; Electrochim Acta 1998, V43, P2399 HCA
(3) Abraham, K; J Electrochem Soc 1990, V137, P1657 HCA
(4) Armand, M; 2nd International Meeting on Solid Electrolytes 1978
(5) Armand, M; Fast Ion Transport in Solid 1979
(6) Berthier, C; Solid State Ionics 1983, V11, P91 HCA
(7) Croce, F; Chem Mater 1993, V5, P1268 HCA
(8) Fenton, B; Polymer 1973, V14, P589
(9) Ferry, A; Polymer 1996, V37, P737 HCA
(10) Huang, B; Solid State Ionics 1996, V91, P279 HCA
(11) Huang, H; Electrochim Acta 1992, V31, P1671
(12) Huang, H; Electrochim Acta 1992, V37, P1671 HCA
(13) Mclennaghan, A; Eur Polym J 1989, V25, P1297 HCA
(14) Minier, M; J Phys 1984, V45, P739 HCA
(15) Seki, M; Makromol Chem, Macromol Chem Phys 1992, V193, P2971 HCA
(16) Stallworth, P; Solid State Ionics 1994, V73, P119 HCA
(17) Tatsuma, T; J Electroanal Chem 1999, V472, P142 HCA
(18) Vanheumen, J; Macromolecules 1995, V28, P4268 HCA
(19) Wang, X; J Polym Sci Part B 1999, V37, P837 HCA
(20) Wang, Z; Solid State Ionics 1999, V121, P141 HCA
(21) Watanabe, M; J Polym Sci, Polym Phys 1983, V21, P939 HCA
(22) Watanabe, M; Macromolecules 1986, V19, P815 HCA

(23) Wen, T; Macromolecules 1999, V32, P2712 HCA
(24) Wen, T; Macromolecules 2001, V34, P2958 HCA
(25) Wieczorek, W; J Phys Chem 1994, V98, P6840 HCA
(26) Wright, P; Br Polym J 1975, V7, P319 HCA

L64 ANSWER 13 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 136:372245 HCA Full-text
TI Nonaqueous electrolyte secondary battery, separator used in it, and its manufacture
IN Ueda, Hideyuki; Kuranaka, Satoshi; Nanai, Norishige
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002141042	A	20020517	JP 2000-335502	20001102 <--
	JP 3419393	B2	20030623		
PRAI	JP 2000-335502		20001102 <--		

AB The battery has a 9-17-.mu.m separator comprising a successive laminate of (A) a 2- 3-.mu.m heat-resistant porous polymer cathode-side layer, which may be an aramid resin, (B) a 5-9-.mu.m porous polyolefin intermediate layer, which may be polyethylene, and (C) a gel polymer anode-side layer, which may be a 2-3 -.mu.m vinylidene fluoride polymer layer or a 3- 5-.mu.m polyoxyethylene deriv. layer. The separator is manufd. by forming a porous polyethylene film, applying an aramid resin on a side of the film, making the aramid resin layer porous, and applying a vinylidene fluoride polymer or a precursor soln. contg. ethylene oxide polymers, polymn. initiators, and electrolytic solns. on the other side of the film, followed by 3-dimensional thermal or UV crosslinking. The separator shows reduced thickness and improved mech. strength.
IC ICM H01M002-16
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST nonaq electrolyte battery separator porous laminate; aramid resin polyethylene polyoxyethylene laminate battery separator; vinylidene fluoride polymer porous polyethylene aramid resin battery separator
IT Polyamides, uses

(arom.; laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT Fluoropolymers, uses
(gel; laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT Fluoro rubber
(hexafluoropropene-vinylidene fluoride, Kynar Flex 2801;
laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT Secondary batteries
Secondary battery separators
(laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT Polyesters, uses
Polyoxyalkylenes, uses
(laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT 24938-64-5P, p-Phenylenediamine-terephthaloyl chloride copolymer,sru
26125-61-1P, p-Phenylenediamine-terephthaloyl chloride copolymer
(laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT 9002-88-4, Polyethylene
(laminated battery separator using
porous aramid resin, porous
polyethylene, and vinylidene fluoride polymer gel or
polyoxyethylene gel for nonaq. electrolyte secondary
battery)

IT 9003-11-6, Ethylene oxide-propylene oxide copolymer 9010-75-7
9010-89-3, Adipic acid-diethylene glycol copolymer 25036-49-1,

Adipic acid-diethylene glycol copolymer, sru 25322-68-3, Polyethylene oxide 35064-83-6, Perfluoromethyl vinyl ether-vinylidene fluoride copolymer
(laminated battery separator using porous aramid resin, porous polyethylene, and vinylidene fluoride polymer gel or polyoxyethylene gel for nonaq. electrolyte secondary battery)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
(rubber; laminated battery separator using porous aramid resin, porous polyethylene, and vinylidene fluoride polymer gel or polyoxyethylene gel for nonaq. electrolyte secondary battery)

L64 ANSWER 14 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 134:369342 HCA Full-text
TI Multi-layered polymer electrolytes towards interfacial stability in lithium ion batteries
AU Aldissi, M.
CS Fractal Systems Inc., Tampa, FL, 33626, USA
SO Journal of Power Sources (2001), 94(2), 219-224
CODEN: JPSODZ; ISSN: 0378-7753
PB Elsevier Science S.A.
DT Journal
LA English
AB Interfacial phenomena in lithium ion polymer batteries result in capacity fade upon cycling due to a no. of reasons, with the major one being the poor electrode/electrolyte interface. This leads to poor chem. and electrochem. stability of the electrolyte, i.e. decompn., electrode passivation, etc. In this paper, we describe a model system, which we have applied to a lithium ion battery for improving compatibility between electrodes and electrolytes in a truly solid-state system. This involved the fabrication of plasticizer-free multi-layered polymer electrolytes wherein the different layers have different compatibility characteristics with the electrodes. These characteristics include morphol., ionic and electronic mobility within the whole cell. Preliminary results using this approach are described.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 58, 72
ST polymer electrolyte multi layered interfacial stability; lithium battery polymer electrolyte multi layered; PEG thiophene copolymer electrolyte

IT   Secondary batteries
        (lithium; multi-layered polymer
        electrolytes towards interfacial stability in lithium ion
        batteries)
IT   Battery electrolytes
     Electric conductivity
        (multi-layered polymer
        electrolytes towards interfacial stability in lithium ion
        batteries)
IT   12190-79-3, Cobalt lithium oxide colio2   339531-93-0
        (multi-layered polymer
        electrolytes towards interfacial stability in lithium ion
        batteries)

RE
(1) Abraham, K; J Power Sources 1993, V44, P195
(2) Appetecchi, G; Electrochim Acta 1995, V40, P991 HCA
(3) Appetecchi, G; J Power Sources 1997, V66, P77 HCA
(4) Arbizzani, C; J Power Sources 1993, V43/44, P453
(5) Armand, M; Adv Mater 1990, V2, P278 HCA
(6) Armand, M; Electrochemistry of Novel Materials 1994, P65 HCA
(7) Baril, D; Solid State Ionics 1997, V94, P35 HCA
(8) Dautzenberg, G; Chem Mater 1994, V6, P538 HCA
(9) Gray, F; Solid Polymer Electrolytes 1991
(10) Johnson, B; J Power Sources 1998, V70(1), P48 HCA
(11) Judeinstein, P; Chem Mater 1994, V6, P127 HCA
(12) Lemaire, M; New J Chem 1989, V13, P863 HCA
(13) Levesque, I; Chem Mater 1996, V8(12), P2843 HCA
(14) MacCullum, J; Polymer Electrolyte Review 1 & 2 1987
(15) Minett, M; Proceedings of the ICSM'88 1989, V28, PC-211
(16) Nagasubramanian, G; J Appl Electrochem 1994, V24, P298
(17) Nishi, Y; US 4959281 1990 HCA
(18) Peled, E; J Electrochem Soc 1996, V143, PL5
(19) Roncali, J; Chem Rev 1992, V92, P711 HCA
(20) Ruiz-Hitzky, E; Adv Mater 1993, V5, P334 HCA
(21) Ruiz-Hitzky, E; Adv Mater 1995, V7, P180 HCA
(22) Schmutz, C; Proceedings of the Electrochemical Society Meeting 1994
(23) Tarascon, J; Proceedings of the eighth International Meeting on
    Lithium Battery 1996
(24) Vincent, C; Chemistry in Britain 1981, P391

L64 ANSWER 15 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN   134:165572 HCA Full-text
TI   Plastic PVDF-HFP electrolyte laminates prepared by a
     phase-inversion process
AU   du Pasquier, A.; Warren, P. C.; Culver, D.; Gozdz, A. S.; Amatucci,
     G. G.; Tarascon, J.-M.
CS   Telcordia Technologies (formerly Bellcore), Red Bank, NJ, 07701, USA

SO   Solid State Ionics (2000), 135(1-4), 249-257
     CODEN: SSIOD3; ISSN: 0167-2738
PB   Elsevier Science B.V.
DT   Journal
LA   English
AB   A method of making microporous separators and laminated plastic Li-ion batteries which avoids the use of a plasticizer extn. process is described. It is based on phase inversion of PVDF-HFP copolymers via film casting from solns. of the copolymer in a mixt. of volatile solvent and non-solvent. The electrode and separator films so obtained exhibit a high electrolyte uptake and allow the fabrication of laminated plastic Li-ion batteries with good discharge rate capabilities. The unique and unexpected pore morphol. obtained by the described process is illustrated by SEM microphotographs. Its effect on the mech. stability of the microporous structure, which enables excellent bonding of the various layers via lamination under elevated temp. and pressure without destruction of the porosity, is discussed as well.
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST   polyvinylidene fluoride fluoropropylene copolymer electrolyte laminate separator; lithium battery microporous separator plasticized polymer
IT   Polyelectrolytes
     Secondary battery separators
        (plastic PVDF-HFP electrolyte laminates prepd. by phase-inversion process)
IT   9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer
        (plastic PVDF-HFP electrolyte laminates prepd. by phase-inversion process)
RE

(1) Anon; US 5811205 1998 HCA
(2) Anon; http://www.telcordia.com/research/whatwedo/products/patent.html
(3) Appetecchi, G; J Electrochem Soc 1997, V144, P138
(4) Baudry, P; J Power Sources 1997, V68, P432 HCA
(5) Boudin, F; 9th Int Meeting on Lithium Batteries Abstracts Book 1998
(6) Gozdz, A; Rechargeable Lithium and Lithium-ion (RCT) Batteries Symposium of the 186th Electrochemical Society Meeting 1994
(7) Lampe-Onnerud, C; Proc 15th Int Seminar and Exchange on Primary and Secondary Batteries 1998
(8) Tarascon, J; Solid State Ionics 1996, V86-88, P49 HCA
(9) Zaghib, K; J Electrochem Soc 1998, V145, P3135 HCA

L64 ANSWER 16 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN   133:46207 HCA Full-text
TI   Microporous solid electrolytes for lithium secondary batteries
IN   Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Hong, Sung Min

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PA   Finecell Co., Ltd., S. Korea
SO   PCT Int. Appl., 46 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------
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PI   WO 2000038263        A1    20000629    WO 1999-KR798
                                                                   199912
                                                                   21
                                                 <--
         W:  CN, JP, US
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
             NL, PT, SE
     EP 1171927           A1    20020116    EP 1999-960009
                                                                   199912
                                                                   21
                                                 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
             PT, IE, FI
     JP 2002543554        T     20021217    JP 2000-590241
                                                                   199912
                                                                   21
                                                 <--
PRAI KR 1998-57031        A     19981222  <--
     WO 1999-KR798        W     19991221  <--
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AB The present invention relates to a solid electrolyte having a good cond. to lithium ion by allowing the liq. components and lithium salts to be absorbed into the electrolyte film contg. an absorbent added at the time of its prepn. and having a porosity, a process for prepg. the same and a rechargeable lithium cell using the same as an electrolyte. As the absorbent, inorg. materials having not more than 40 .mu.m of particle size can be used. As the polymer binder, any binder whose soly. against the liq. electrolyte is small can be used. A wet process can introduce the porous structure of the electrolyte film. The solid electrolyte according to the present invention has the ionic cond. of more than approx. 1 to 3 x 10-3 S/cm at room temp. and low reactivity to lithium metal. The cell is fabricated from the solid electrolyte together with electrodes by lamination or pressing methods and, the liq. electrolyte, which is decompd. by moisture, is introduced to a cell just before packaging. Therefore, the solid electrolyte according to the present invention is not affected by the humidity and temp. conditions during the manufg. of the electrolyte film. In addn., the solid electrolyte according to the present

invention has high thermal, mech. and electrochem. stability, and thus is suitable as an electrolyte for rechargeable lithium cells.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(porous, absorbent; microporous solid electrolytes for lithium secondary batteries)

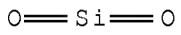
RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA

CN Silica (CA INDEX NAME)



IC ICM H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium battery microporous solid electrolyte

IT Cellulose pulp
Cork
(absorbent; microporous solid electrolytes for lithium secondary batteries)

IT Polyurethanes, uses
Zeolites (synthetic), uses
(absorbent; microporous solid electrolytes for lithium secondary batteries)

IT Synthetic rubber, uses
(acrylic-acrylonitrile-butadiene, binder; microporous solid electrolytes for lithium secondary batteries)

IT EPDM rubber
Fluoropolymers, uses
Polycarbonates, uses
Polyethers, uses
Polyimides, uses
Polymers, uses
Polyoxyalkylenes, uses
Polysulfones, uses
(binder; microporous solid electrolytes for lithium secondary batteries)

IT Wood
(flour, absorbent; microporous solid electrolytes for lithium secondary batteries)

IT Polyvinyl acetals
(formals, binder; microporous solid electrolytes for lithium

secondary batteries)

IT Secondary batteries
(lithium; microporous solid electrolytes for lithium secondary batteries)

IT Molecular sieves
(mesoporous, absorbent; microporous solid electrolytes for lithium secondary batteries)

IT Absorbents
Battery electrolytes
(microporous solid electrolytes for lithium secondary batteries)

IT Clays, uses
Mica-group minerals, uses
Minerals, uses
(particles, absorbent; microporous solid electrolytes for lithium secondary batteries)

IT Binders
(polymers; microporous solid electrolytes for lithium secondary batteries)

IT 9002-88-4 9003-07-0, Polypropylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses
(absorbent; microporous solid electrolytes for lithium secondary batteries)

IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol 9003-21-8, 2-Propenoic acid, methyl ester, homopolymer 9003-27-4, Polyisobutylene 9011-14-7, Pmma 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 9012-09-3, Cellulose triacetate 9016-00-6, Polydimethylsiloxane 17831-71-9, Tetraethyleneglycol diacrylate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic anhydride-Vinylidene fluoride copolymer
(binder; microporous solid electrolytes for lithium secondary batteries)

IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
(microporous solid electrolytes for lithium secondary batteries)

IT 56-81-5, 1,2,3-Propanetriol, uses 60-29-7, Ether, uses 64-17-5, Ethanol, uses 67-64-1, Acetone, uses 67-66-3, uses 71-36-3, Butanol, uses 75-05-8, Acetonitrile, uses 75-09-2, Dichloromethane, uses 107-21-1, 1,2-Ethanediol, uses 108-94-1, Cyclohexanone, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6, Acetic acid ethyl ester, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, uses 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol
(microporous solid electrolytes for lithium secondary batteries)

IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
(particles, absorbent; microporous solid electrolytes for lithium secondary batteries)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(porous, absorbent; microporous solid electrolytes for lithium secondary batteries)

RE
(1) Toshiba Battery Co; US 5079109 A 1992 HCA
(2) Yasumasa, N; Telecommunications Energy Conference, INTELEC '95 1995, P704

L64 ANSWER 17 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 133:46206 HCA Full-text
TI Solid electrolytes using absorbent for rechargeable lithium batteries
IN Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Oh, Seung Mo
PA Finecell Co., Ltd., S. Korea
SO PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000038262	A1	20000629	WO 1999-KR797 <--	19991221

W: CN, JP, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	EP 1145354	A1	20011017	EP 1999-960008 <--	19991221

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, FI
JP 2002543553 T 20021217 JP 2000-590240
199912
21
<--
PRAI KR 1998-57030 A 19981222 <--
WO 1999-KR797 W 19991221 <--

AB The present invention relates to a solid electrolyte having cond. to lithium ion by providing spaces for liq. component and lithium salts to be absorbed by way of introducing an absorbent to the inside of an electrolyte film, a process for prepg. the same and a rechargeable lithium cell using the same. As the absorbent, polymers or inorg. materials having not more than 40 μm of particle size can be used. As the polymer binder, any binder whose soly. against the liq. electrolyte is small can be used. The solid electrolyte according to the present invention has the ionic cond. of more than approx. 10-4 S/cm at room temp. The cell is fabricated from the solid electrolyte together with electrodes by lamination or pressing methods. The liq. electrolyte, which is decompd. by moisture, is introduced to a cell just before packaging. Therefore, the solid electrolyte according to the present invention is not affected by the humidity and temp. conditions during the manufg. of the electrolyte film. In addn., the solid electrolyte according to the present invention has high mech. strength and little reactivity to lithium metal, and thus is suitable as an electrolyte for rechargeable lithium cells.

IT 1344-28-1, Alumina, uses 7631-86-9,
Silica, uses
(porous, particles; solid electrolytes using absorbent for rechargeable lithium batteries)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)

O═Si═O

IC ICM H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium battery electrolyte absorbent
IT Polysiloxanes, uses
(Me; solid electrolytes using absorbent for rechargeable lithium

batteries)
IT Synthetic rubber, uses
(acrylonitrile-butylidene; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Wood
(flour; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polyvinyl acetals
(formals; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Secondary batteries
(lithium; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Molecular sieves
(mesoporous; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Clays, uses
Mica-group minerals, uses
Minerals, uses
Zeolites (synthetic), uses
(particles; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Cork
(powder; solid electrolytes using absorbent for rechargeable lithium batteries)
IT Absorbents
Battery electrolytes
Cellulose pulp
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Carbon black, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT EPDM rubber
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Fluoropolymers, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Nitrile rubber, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polycarbonates, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polyethers, uses
(solid electrolytes using absorbent for rechargeable lithium

batteries)
IT Polyimides, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polymers, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polyoxyalkylenes, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polysulfones, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT Polyurethanes, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT 9003-18-3
(nitrile rubber, solid electrolytes using absorbent for rechargeable lithium batteries)
IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
(particles; solid electrolytes using absorbent for rechargeable lithium batteries)
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(porous, particles; solid electrolytes using absorbent for rechargeable lithium batteries)
IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0 143-24-8, Tetraglyme 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
(solid electrolytes using absorbent for rechargeable lithium batteries)
IT 9002-86-2, Polyvinyl chloride 9002-88-4 9002-89-5, Polyvinyl alcohol 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose triacetate 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic anhydride-vinylidene fluoride

copolymer
(solid electrolytes using absorbent for rechargeable lithium batteries)

RE
(1) Toshiba Battery Co; US 5079109 A 1992 HCA
(2) Yasumasa, N; Telecommunications Energy Conference, INTELEC '95 1995, P704

L64 ANSWER 18 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 129:97777 HCA Full-text
OREF 129:20107a,20110a
TI Gas diffusion electrodes, solid polymer electrolyte membranes, their manufacture, and solid polymer electrolyte fuel cells
IN Totsuka, Kazuhide
PA Japan Storage Battery Co., Ltd., Japan
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9829916	A1	19980709	WO 1997-JP4911 <--	19971226
	W: CN, US				
	RW: DE, FR				
	JP 10241701	A	19980911	JP 1997-370336 <--	19971226
	JP 3903562	B2	20070411		
	EP 949703	A1	19991013	EP 1997-950441 <--	19971226
	R: DE, FR				
	CN 1242111	A	20000119	CN 1997-181058 <--	19971226
	US 20020004159	A1	20020110	US 1999-331850	19990628

<--
US 6592934 B2 20030715
PRAI JP 1996-357974 A 19961227 <--
WO 1997-JP4911 W 19971226 <--

AB The electrodes have a catalyst layer, contg. a catalyst body and a porous ion exchange resin, on a gas diffusion layer. The resin is preferably a perfluorosulfonic acid and the catalyst is a noble metal with or without a C support. The electrodes are prepd. by soaking precursors of the electrolyte layer having an ion exchanger resin coating in an org. solvent contg. polar functional groups other than OH to solidify the resin into a porous layer. The electrolyte membranes are ion exchanger membranes, preferably perfluorosulfonic acid, having porosity ≥10%, pore diam. 0.02-10 . mu.m; and are prepd. by forming membranes from a soln. of the ion exchanger resin in an alc. contg. solvent and soaking the membrane is an org. solvent contg. polar functional groups other than OH. The fuel cells use laminates of the electrolyte membranes and the electrodes.

IC ICM H01M004-86
ICS H01M004-88; H01M008-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST fuel cell polymer electrolyte membrane manuf; gas diffusion electrode manuf fuel cell; perfluorosulfonic acid electrolyte fuel cell electrode
IT Fuel cell electrolytes
(electrolyte membranes for fuel cells using gas diffusion electrodes contg. porous Nafion coatings in platinum catalyst layers)
IT Polyoxyalkylenes, uses
(fluorine- and sulfo-contg., ionomers; structure and manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)
IT Polyoxyalkylenes, uses
(fluorine-contg., sulfo-contg., ionomers; structure and manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)
IT Fuel cells
(fuel cells using polymer electrolyte laminated with electrodes having catalyst layers contg. porous ion exchanger coatings)
IT Fluoropolymers, uses
Fluoropolymers, uses
(polyoxyalkylene-, sulfo-contg., ionomers; structure and manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)

IT Ionomers
(polyoxyalkylenes, fluorine- and sulfo-contg.; structure and manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)
IT Fuel cell electrodes
(structure and manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)
IT 77950-55-1, Nafion 115
(electrolyte membranes for fuel cells using gas diffusion electrodes contg. porous Nafion coatings in platinum catalyst layers)
IT 123-86-4, n-Butyl acetate 9002-86-2, Pvc
(in manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
(structure and manuf. of gas diffusion electrodes with platinum catalyst layers contg. porous Nafion coatings for polymer electrolyte fuel cells)

RE
(1) Fuji Electric Co Ltd; JP 412458 A 1992
(2) Matsushita Electric Industrial Co Ltd; JP 888007 A 1996
(3) Sanyo Electric Co Ltd; JP 07176310 A 1995 HCA
(4) Tokyo Gas Co Ltd; JP 08148153 A 1996 HCA

L64 ANSWER 19 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 129:97753 HCA Full-text
OREF 129:20103a,20106a
TI Thin film electrolytes for lithium batteries
IN Hamanaka, Katsuhiko; Yokoyama, Takayuki
PA Asahi Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10189049	A	19980721	JP 1996-343721	19961224

<--

JP 4030142 B2 20080109
PRAI JP 1996-343721 19961224 <--
AB The electrolytes have a Li salt soln. impregnated in and immobilized by microporous polyolefin membranes, having thickness 10-60 .mu.m, av. pore diam. 0.1-0.6 .mu .m, porosity 75-90, open porosity 50-90%, and tensile strength ≥130kg/cm2 in the length direction.
IT 7631-86-9, Nipsil lp, uses
(in manuf. of thin film electrolytes contg. lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)

O=Si=O

IC ICM H01M010-40
ICS C08J009-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery electrolyte polyolefin microporous membrane
IT Battery electrolytes
(thin film electrolytes contg. lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)
IT 117-81-7, Dop 7631-86-9, Nipsil lp, uses
(in manuf. of thin film electrolytes contg. lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)
IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
(thin film electrolytes contg. lithium salt solns. impregnated in porous polyolefin membrane laminates for lithium batteries)
IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 9002-88-4, Polyethylene 14283-07-9, Lithium fluoroborate
(thin film electrolytes contg. lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)

L64 ANSWER 20 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN 127:250497 HCA Full-text
OREF 127:48915a,48918a
TI Characterization of PEO-PAN hybrid solid polymer electrolytes
AU Munichandraiah, N.; Sivasankar, G.; Scanlon, L. G.; Marsh, R. A.
CS Department of Inorganic and Physical Chemistry, Indian Institute of

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     Science, Bangalore, 560 012, India
SO   Journal of Applied Polymer Science (1997), 65(11),
     2191-2199
     CODEN: JAPNAB; ISSN: 0021-8995
PB   Wiley
DT   Journal
LA   English
AB   Hybrid solid polymer electrolytes (HSPE) of high ionic cond. were
      prepd. using polyethylene oxide (PEO), polyacrylonitrile (PAN),
      propylene carbonate (PrC), ethylene carbonate (EC), and LiClO4.
      These electrolyte films were dry, free standing, and dimensionally
      stable.  The HSPE films were characterized by constructing sym. cells
      contg. nonblocking lithium electrodes as well as blocking stainless
      steel electrodes.  Studies were made on ionic cond., electrochem.
      reaction, interfacial stability, and morphol. of the films using a.c.
      impedance spectroscopy, IR spectroscopy, and SEM.  The properties of
      HSPE were compared with the films prepd. using (i) PEO, PrC, and
      LiClO4; and (ii) PAN, PrC, EC, and LiClO4.  The specific cond. of the
      HSPE films was marginally less.  Nevertheless, the dimensional
      stability was much superior.  The interfacial stability of lithium
      was similar in the three electrolyte films.
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
ST   lithium battery hybrid solid polymer
     electrolyte; polyethylene oxide polyacrylonitrile hybrid
     polymer electrolyte
IT   Battery electrolytes
     Ionic conductivity
        (characterization of PEO-polyacrylonitrile hybrid solid
        polymer electrolyte)
IT   Polyoxyalkylenes, uses
        (electrolyte; characterization of PEO-polyacrylonitrile hybrid
        solid polymer electrolyte)
IT   Electric resistance
        (interfacial; characterization of PEO-polyacrylonitrile hybrid
        solid polymer electrolyte)
IT   Secondary batteries
        (lithium; characterization of PEO-polyacrylonitrile hybrid solid
        polymer electrolyte)
IT   96-49-1, Ethylene carbonate   108-32-7, Propylene carbonate
     7791-03-9, Lithium perchlorate   25014-41-9, Polyacrylonitrile
     25322-68-3, Peo
        (electrolyte; characterization of PEO-polyacrylonitrile hybrid
        solid polymer electrolyte)

L64  ANSWER 21 OF 25  HCA  COPYRIGHT 2008 ACS on STN
AN   125:304888  HCA  Full-text
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OREF 125:56973a,56976a

TI Fabrication of polymer electrolyte fuel cell (PEFC) H2 sensors

AU Hong, Young-Jin; Oh, Seung M.

CS Department of Chemical Technology, College of Engineering, Seoul National University, Seoul, 151-742, S. Korea

SO Sensors and Actuators, B: Chemical (1996), B32(1), 7-13
CODEN: SABCEB; ISSN: 0925-4005

PB Elsevier

DT Journal

LA English

AB Galvanic cell-type polymer electrolyte fuel cell gas sensors were fabricated. Their sensing behaviors to H2 were examd. The sensing elements, Pt/Nafion composite electrodes, were prepd. by first ion exchanging $Pt(NH_3)_4^{2+}$ ions and then chem. reducing with $NaBH_4$ soln. Among the prepn. variables for the composite electrodes, the $NaBH_4$ soln. flux has the most significant effect on the microstructure of the Pt deposits and therefore on the sensing characteristics of the resulting sensors. Submicron-size Pt deposits were dispersed evenly in the deeper region of the membrane surface under a high-flux condition, while densely clustered Pt particles were deposited mainly on the external surface of the membrane when the flux was low. The current intensities were well correlated with the effective surface area of the Pt deposits, but not with the layer thickness. The current intensities and linearly responding H2 concn. range were also influenced by the size of the capillary-type diffusion barrier.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST polymer electrolyte fuel cell hydrogen sensor

IT Fuel cells
(fabrication of polymer electrolyte fuel cell hydrogen sensors)

IT Polyoxyalkylenes, uses
(fluorine- and sulfo-contg., ionomers, fabrication of polymer electrolyte fuel cell hydrogen sensors with platinum/Nafion composite electrodes)

IT Sensors
(gas, electrochem., fabrication of polymer electrolyte fuel cell hydrogen sensors)

IT Fluoropolymers
(polyoxyalkylene-, sulfo-contg., ionomers, fabrication of polymer electrolyte fuel cell hydrogen sensors with platinum/Nafion composite electrodes)

IT Ionomers

(polyoxyalkylenes, fluorine- and sulfo-contg., fabrication of polymer electrolyte fuel cell
hydrogen sensors with platinum/Nafion composite
electrodes)

IT 1333-74-0, Hydrogen, miscellaneous
(fabrication of polymer electrolyte fuel
cell hydrogen sensors)

IT 7440-06-4, Platinum, uses 66796-30-3, Nafion 117
(fabrication of polymer electrolyte fuel
cell hydrogen sensors with platinum/Nafion
composite electrodes)

L64 ANSWER 22 OF 25 HCA

AN 120:81462 HCA Full-text

OREF 120:14561a,14564a

TI Composite solid electrolyte for Li battery applications

AU Nagasubramanian, G.; Attia, A. I.; Halpert, G.; Peled, E.

CS Jet Propulsion Laboratory, California Institute of Technology,
Pasadena, CA, 91109, USA

SO Solid State Ionics (1993), 67(1-2), 51-6
CODEN: SSIOD3; ISSN: 0167-2738

DT Journal

LA English

AB The electrochem., bulk and interfacial properties of the PEO-based composite solid electrolyte (CSE) comprising LiI, PEO, and Al2O3 have been evaluated for Li battery applications. The bulk interfacial and transport properties of the CSEs seem to strongly depend on the alumina particle size. For the CSE films, with 0.05 .mu.m alumina, while the bulk cond. is .apprx.10-4 (mho/cm) at 103°, the Li ion transport no. seems to be close to unity at the same temp. Compared to the PEO electrolyte, this polymer composite electrolyte seems to exhibit robust mech. and interfacial properties. The authors have studied three different films with three different alumina sizes of 0.01-0.3 .mu .m. Effects of Al2O3 particle size on the electrochem. performance of polymer composite electrolyte will be discussed. With TiS2 as cathode a 10 mA-h small capacity cell was charged and discharged at C/40 and C/20 rates, resp.

IT 1344-28-1, Alumina, uses
(composite electrolyte with PEO and lithium iodide and,
electrochem. and bulk and interfacial properties of, for lithium
battery)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium battery polymer electrolyte;

PEO lithium iodide alumina electrolyte battery
IT   Battery electrolytes
        (PEO-lithium iodide-alumina composite, electrochem. and
        bulk and interfacial properties of)
IT   Electric conductivity and conduction
        (of PEO-lithium iodide-alumina composite electrolyte
        for lithium battery applications)
IT   Diffusion
        (of lithium, in titanium sulfide cathode, lithium-polymer
        electrolyte battery performance in relation to)
IT   7439-93-2D, Lithium, poly(ethylene oxide) complexes   25322-68-3D,
     PEO, lithium complexes
        (alumina composite, electrolyte, electrochem. and bulk
        and interfacial properties of, for lithium battery)
IT   10377-51-2, Lithium iodide
        (composite electrolyte with PEO and alumina and,
        electrochem. and bulk and interfacial properties of, for lithium
        battery)
IT   1344-28-1, Alumina, uses
        (composite electrolyte with PEO and lithium iodide and,
        electrochem. and bulk and interfacial properties of, for lithium
        battery)
IT   7439-93-2, Lithium, properties
        (diffusion of, in titanium sulfide cathode, lithium-
        polymer electrolyte battery
        performance in relation to)

L64 ANSWER 23 OF 25 HCA COPYRIGHT 2008 ACS on STN
AN   111:177867 HCA Full-text
OREF 111:29579a,29582a
TI   Alloy/conducting-polymer composite electrodes:
     electrolytes, cathodes, and morphology
AU   Maxfield, M.; Jow, T. R.; Sewchok, M. G.; Shacklette, L. W.
CS   Allied-Signal, Inc., Morristown, NJ, 07960, USA
SO   Journal of Power Sources (1989), 26(1-2), 93-102
     CODEN: JPSODZ; ISSN: 0378-7753
DT   Journal
LA   English
AB   Alkali metal alloy-conducting polymer composite electrodes made with
     poly(p-phenylene)(I) and polyacetylene(II) had a high rechargeability
     for donor doping (cation insertion) in NaPF6/1,2-dimethoxyethane,
     LiPF6/2-methyltetrahydrofuran electrolytes, and in sulfolane and PhCN
     solvents at restricted potentials. Na-Pb, Li-Pb, and Li-Al alloys,
     formed as composites with I and II, were cycled exhaustively with
     excellent charge capacity retention. The composites form
     rechargeable cells with cation-inserting cathodes. Balanced cells
     having Na-Pb/I anodes and NaCoO2 cathodes were cycled 250 times with

little capacity loss. The good performance of these composites is due to the fibrillar morphol. of the polymer. After several cycles, the composites possess the fibrillar structure of pure polymer electrodes, with cryst. alloy uniformly distributed on or in the fibrils in particles of <0.2 .mu.m. This structure, particularly when the fibrils are swollen with electrolyte, facilitates rapid transport of ions and electronic charge throughout the electrode.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 56

ST alkali metal alloy composite electrode; conducting polymer composite electrode; battery composite electrode polymer alloy; polyphenylene composite electrode battery; polyacetylene composite electrode battery; sodium lead alloy composite electrode; lithium lead alloy composite electrode; aluminum lithium alloy composite electrode

IT Electric conductivity and conduction
(of alkali metal hexafluorophosphates and tetraphenylborate in ether, as electrolytes, in alkali metal alloy-conducting polymer composite anode batteries)

IT Rubber, synthetic
(EPDM, binder, for alkali metal alloy-conducting polymer composite anodes, for rechargeable battery)

IT Anodes
(battery, alkali metal alloy-conducting polymer composite, morphol. of, cycling performance in relation to)

IT 25067-58-7, Polyacetylene
(anodes, butane sultone-treated, composite with alkali metal alloys, morphol. of, battery cycling performance in relation to)

IT 25190-62-9, Poly(p-phenylene)
(anodes, composite with alkali metal alloys, morphol. of, battery cycling performance in relation to)

IT 39411-53-5, Aluminum, lithium (AlLi1.3) 97037-12-2, Lead, lithium (PbLi4.3) 106771-74-8, Lead, sodium (Na3.75Pb)
(anodes, composite with conducting polymer, morphol. of, battery cycling performance in relation to)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 114986-73-1, Cobalt sodium oxide (CoNa0.67O2) 117595-37-6, Lithium manganese oxide (Li0-1Mn2O4) 123193-61-3, Cobalt lithium oxide (CoLi0.5-1O2) 123193-62-4, Lithium vanadium oxide (Li0-0.4VO2.5) 123193-63-5, Lithium vanadium oxide (Li0-0.6VO2.17) 123193-64-6, Cobalt sodium oxide (CoNa0.5-1O2)
(cathodes, rechargeable batteries with alloy-polymer composite anode and, performance of)

IT 96-47-9, 2-Methyltetrahydrofuran 100-47-0, Benzonitrile,

properties 108-32-7, Propylene carbonate 109-99-9, THF, properties 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 1633-83-6, 1,4-Butane sultone 19354-27-9, Methyltetrahydrofurfuryl ether
(electrolyte contg., properties of, for battery with alkali metal alloy-conducting polymer composite anode)

IT 14485-20-2, Lithium tetraphenylborate 21324-39-0, Sodium hexafluorophosphate 21324-40-3, Lithium hexafluorophosphate
(electrolyte, in ether solvent, for battery with alkali metal alloy-conducting polymer composite anode)

IT 7791-03-9, Lithium perchlorate
(electrolyte, in propylene carbonate-butane sultone mixt., properties of, for battery with alkali metal alloy-conducting polymer composite anode)

IT 74-85-1
(rubber, EPDM, binder, for alkali metal alloy-conducting polymer composite anodes, for rechargeable battery)

L64 ANSWER 24 OF 25 HCA COPYRIGHT 2008 ACS on STN

AN 109:213539 HCA Full-text

OREF 109:35317a,35320a

TI Morphological changes in polymer electrolyte cells

AU Munshi, M. Z. A.; Owens, B. B.

CS Corros. Res. Cent., Univ. Minnesota, Minneapolis, MN, 55455, USA

SO Solid State Ionics (1988), 27(4), 251-8
CODEN: SSIOD3; ISSN: 0167-2738

DT Journal

LA English

AB Rechargeable solid state barriers utilizing Li anodes, V6O13 composite cathodes, and polymer electrolytes made from PEO-LiCF3SO3 complex were investigated at 100°. The cells exhibited good cycling and reversibility. Optical microscopy and SEM were used to study the morphol. changes taking place at the electrodes and electrolyte as a function of cycle no. Post-mortem examn. of the cell material indicated that the structures of Li, electrolyte, and cathode become fine grained, smoother and more coherent. The cathode underwent a re-healing process during the early stage of cycling. The structures are consistent with one another and a long cycle life can be attained by the cells.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

ST lithium vanadium oxide polymer battery; PEO lithium trifluoromethanesulfonate electrolyte battery; morphol lithium polymer electrolyte battery; conducting polymer PEO electrolyte battery

IT Batteries, secondary

(solid-electrolyte, lithium-vanadium oxide, with PEO-lithium trifluoromethanesulfonate electrolyte, morphol. changes in, by cycling)

IT 7439-93-2, Lithium, uses and miscellaneous
(anodes, batteries with vanadium oxide cathode and PEO-lithium trifluoromethanesulfonate electrolyte and, morphol. changes in, by cycling)

IT 12037-42-2, Vanadium oxide (V6013)
(cathodes, batteries with lithium anode and PEO-lithium trifluoromethanesulfonate electrolyte and, morphol. changes in, by cycling)

IT 33454-82-9, Lithium trifluoromethanesulfonate
(electrolytes, contg. PEO, lithium-vanadium oxide batteries with, morphol. changes in, by cycling)

IT 7439-93-2D, Lithium, PEO complexes 25322-68-3D, PEO, lithium complexes
(electrolytes, contg. trifluoromethanesulfonate, lithium-vanadium oxide batteries with, morphol. changes in, by cycling)

L64 ANSWER 25 OF 25 HCA

AN 102:69309 HCA Full-text

OREF 102:10777a,10780a

TI Vinylpyridine-divinylbenzene copolymer and asbestos composites

AU Modica, G.; Giuffre, L.; Montoneri, E.; Wendt, H.; Hofmann, H.

CS Dip. Chim. Ind. Ing. Chim., Politec. Milano, Milan, 20131, Italy

SO Polymer (1984), 25(10), 1513-2
CODEN: POLMAG; ISSN: 0032-3861

DT Journal

LA English

AB The in-situ copolymn. of vinylpyridine and divinylbenzene in crysotile asbestos cardboards yields composites of higher mech. strength and chem. stability than plain cardboard. The composites were tested as gasket rings and separators of advanced alk. water electrolyzers. The chem. and morphol. changes to which the materials are subjected under these conditions were followed up by IR spectroscopy and SEM and correlated with physicochem. properties.

CC 72-9 (Electrochemistry)
Section cross-reference(s): 35, 36

ST polymer composite asbestos diaphragm electrolyzer; vinylpyridine divinylbenzene copolymn asbestos; vinylbenzene vinylpyridine copolymn asbestos; polymn vinylpyridine divinylbenzene; water electrolysis composite diaphragm cell

IT Asbestos
(composites, with divinylbenzene-vinylpyridine

copolymer, for diaphragms for electrolytic
cells for alk. water electrolysis)
IT Polymerization
(of divinylbenzene with vinylpyridine, in-situ, in asbestos for
diaphragms for electrolytic cells for alk.
water electrolysis)
IT Electrolytic cells
(diaphragm, divinylbenzene-vinylpyridine copolymer
composites with asbestos, for alk. water
electrolysis)
IT 51161-26-3
(asbestos composite with, for separator for electrolytic
cell for alk. water electrolysis)
IT 7732-18-5, reactions
(electrolysis of alk., divinylbenzene-vinylpyridine
copolymer composites with asbestos as
diaphragms for cells for)
IT 1310-58-3, reactions
(electrolysis of aq. solns. of, in electrolytic
cell with separator from divinylbenzene-vinylpyridine
copolymer composite with asbestos)
IT 1337-81-1
(polymn. of, with divinylbenzene, in-situ, in asbestos for
diaphragm for electrolytic cells for alk.
water electrolysis)
IT 1321-74-0, reactions
(polymn. of, with vinylpyridine, in-situ, in asbestos for
electrolytic cells for alk. water electrolysis)

=> D L65 1-14 BIB ABS HITSTR HITIND RE

L65 ANSWER 1 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 141:352737 HCA Full-text
TI Composite polymer electrolyte
composition
IN Ogata, Naoya; Kagawa, Hiroshi; Sada, Makiko
PA Trekion Co., Ltd., Japan
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2004088671	A1	20041014	WO 2004-JP3447	

200403
15

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2507438 A1 20041014 CA 2004-2507438 20040315 <--

EP 1612809 A1 20060104 EP 2004-720736 20040315 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK

CN 1934657 A 20070321 CN 2004-80002056 20040315 <--

IN 2005KN01661 A 20070413 IN 2005-KN1661 20050819 <--

US 20060057465 A1 20060316 US 2005-551330 20050929 <--

PRAI JP 2003-129589 A 20030331 <--
WO 2004-JP3447 W 20040315

AB The disclosed totally solid polymer electrolyte compns. have high ionic cond. and enhanced mech. properties. This electrolyte compn. is produced by polymg. a monomer compn. comprising a molten quaternary ammonium salt having a polymerizable functional group and a charge transfer ion source in the presence of a polymeric reinforcing material. The polymeric reinforcing material can be formed into a composite of polymer blend morphol. by dissolving the

monomer compn. and the reinforcing material in an appropriate org. solvent and polymg. the soln. Alternatively, the composite can be obtained by impregnating a porous sheet or film as the reinforcing material with the monomer compn. and effecting polymn. An electrolyte for lithium ion battery can be obtained by selecting a lithium salt as the charge transfer ion source; an electrolyte for fuel cell by selecting a proton donor; and an electrolyte for dye sensitized solar cell by selecting a redox ion pair. A polymer electrolyte compn. not contg. the charge transfer ion source is also useful as an electrolyte for electrolytic capacitor.

IC ICM H01B001-06
ICS H01M008-02; H01M014-00; H01M010-40; C08L101-00; H01G009-035

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST triflluoromethylsulfonylimide onium salt polymer electrolyte fuel cell; lithium battery triflluoromethylsulfonylimide onium salt polymer electrolyte; capacitor triflluoromethylsulfonylimide onium salt polymer electrolyte

IT Capacitors
(composite polymer electrolytes for)

IT Polymer electrolytes
(composite; bis(trifluoromethylsulfonyl)imide onium salt polymers as)

IT Secondary batteries
(lithium; prepn. of composite solid polymers for)

IT Fuel cells
(polymer electrolyte; prepn. of composite solid polymers for)

IT 74-96-4, Ethylbromide 106-95-6, Allyl bromide, reactions 1072-63-5, 1-Vinylimidazole 98402-58-5
(in prepn. of composite polymer electrolyte)

IT 7398-69-8P, Diallyldimethylammonium chloride 34311-88-1P 204854-22-8P 319476-28-3P 618880-84-5P 655249-87-9P
(in prepn. of composite polymer electrolyte)

IT 775342-41-1P
(prepn. and polymn. in prepn. of polymer electrolyte composites)

RE

(1) Center For Advanced Science And Technology Incubation Ltd; WO 0054351 A1 2000 HCA
(2) Center For Advanced Science And Technology Incubation Ltd; EP 1202365 A1 2000 HCA
(3) Mitsubishi Materials Corp; JP 200377539 A 2003

(4) Nitto Denko Corp; JP 200322823 A 2003
(5) Shikoku Kasei Co Ltd; JP 10-83821 A 1998 HCA

L65 ANSWER 2 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 141:158179 HCA Full-text
TI Multilayer ion exchange membranes with low thickness, high strength, and good ion conductivity
IN Kitamura, Kota; Tatemori, Hiroshi; Hamamoto, Shiro
PA Toyobo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004217715	A	20040805	JP 2003-4393	20030110 <--
PRAI	JP 2003-4393		20030110 <--		

AB The membranes, useful for fuel cell solid electrolytes, comprise (A) continuous pore-including polybenzazole support films and (B) ion exchange resins infiltrated in A and attached on both surfaces of A to form surface layers with thickness 1-50 .mu.m which is smaller than half of the membrane thickness. The resins B have structures of (O-1,4-C6H4O-1,4-C6H4CO-1,4-C6H4)n (I), (1,4-C6H4SO2-1,4-C6H4O)n, (1,4-C6H4SO2-1,4-C6H4O-1,4-C6H4O)n, (1,4-C6H4SO2-1,4-C6H4O-1,4-C6H4-1,4-C6H4O)n, and/or (1,4-C6H4SO2-1,4-C6H4O-1,4-C6H4CMe2-1,4-C6H4O)n and sulfonic acid (salt) substituents thereon. Thus, poly(p-phenylene-cis-benzobisoxazole) dope was cast on glass plate and solidified to give a porous film, which was immersed in sulfonated I soln. and dried to give a 3-layer ion exchange membrane showing total and core-layer thickness 48 and 29 . mu.m, resp., ion exchange capacity 1.6 meq/g, and ion cond. (σ) 0.032 S/cm.
IC ICM C08J005-22
ICS H01B001-06; H01M008-02; H01M008-10; C08L071-12; C08L081-06
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
ST multilayer ion exchange membrane thickness capacity cond; porous polybenzoxazole support ion exchange membrane; sulfonated polyether polyketone polysulfone ion exchange membrane; fuel cell electrolyte ion exchange membrane
IT Polymer electrolytes
(for fuel cells; porous polybenzazole film-supported multilayer ion exchange

membranes with low thickness and good ion cond. for fuel
cell electrolytes)

IT Ion exchange membranes
(multilayer; porous polybenzazole
film-supported multilayer ion exchange
membranes with low thickness and good ion cond. for fuel
cell electrolytes)

IT Polyketones
Polysulfones, uses
(polyether-, sulfonated, ion-exchangeable; porous
polybenzazole film-supported multilayer ion
exchange membranes with low thickness and good ion cond. for fuel
cell electrolytes)

IT Polyethers, uses
(polyketone-, sulfonated, ion-exchangeable; porous
polybenzazole film-supported multilayer ion
exchange membranes with low thickness and good ion cond. for fuel
cell electrolytes)

IT Fuel cell electrolytes
(polymeric; porous polybenzazole film
-supported multilayer ion exchange membranes with low
thickness and good ion cond. for fuel cell
electrolytes)

IT Polybenzoxazoles
(polyphenylene-, porous support films;
porous polybenzazole film-supported
multilayer ion exchange membranes with low thickness and
good ion cond. for fuel cell electrolytes)

IT Polyethers, uses
(polysulfone-, sulfonated, ion-exchangeable; porous
polybenzazole film-supported multilayer ion
exchange membranes with low thickness and good ion cond. for fuel
cell electrolytes)

IT 90960-37-5, 4,6-Diamino-1,3-benzenediol-terephthalic acid
copolymer
(assumed monomers, porous support films;
porous polybenzazole film-supported
multilayer ion exchange membranes with low thickness and
good ion cond. for fuel cell electrolytes)

IT 25135-51-7DP, sulfonated 25667-42-9DP, sulfonated 25839-81-0DP,
sulfonated 28212-68-2DP, sulfonated 31694-16-3DP, sulfonated
(ion-exchangeable; porous polybenzazole film
-supported multilayer ion exchange membranes with low
thickness and good ion cond. for fuel cell
electrolytes)

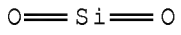
IT 60871-72-9
(porous support films; porous

polybenzazole film-supported multilayer ion
exchange membranes with low thickness and good ion cond. for fuel
cell electrolytes)

L65 ANSWER 3 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 140:306755 HCA Full-text
TI Method of fabrication of composite electrolyte membranes for fuel cells
IN Kaliaguine, Serge; Mikhailenko, Sergei; Zaidi, S. M. Javak
PA Universite Laval, Can.
SO U.S., 43 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6716548	B1	20040406	US 1999-466897 <--	19991220
PRAI	CA 1998-2256829	A	19981218 <--		

AB The present invention relates to composite electrolyte membranes for fuel cells and methods of making same. More specifically, the present invention is directed to proton-conducting membranes for fuel cell applications. The present invention further describes materials which reach high intrinsic proton cond. and are suitable for use as electrolytic membranes in methanol fuel cells.
IT 7631-86-9D, Silica, acid-grafted
(filler; method of fabrication of composite electrolyte membranes for fuel cells)
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)



IC ICM H01M008-10
INCL 429033000; 429317000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST fuel cell polymer composite electrolyte membrane fabrication; methanol fuel cell polymer composite electrolyte membrane

fabrication
IT Fuel cell electrolytes
Glass transition temperature
Membranes, nonbiological
Polymer morphology
Sulfonation
(method of fabrication of composite electrolyte membranes for fuel cells)
IT Fuel cells
(solid electrolyte, direct methanol; method of fabrication of composite electrolyte membranes for fuel cells)
IT 7631-86-9D, Silica, acid-grafted 12738-90-8, Titanium oxide phosphate 12769-93-6, Zirconium oxide phosphate 13308-51-5, Boron phosphate 18130-44-4, Titanium sulfate
(filler; method of fabrication of composite electrolyte membranes for fuel cells)
RE

(1) Anon; http://www.isc.fhg.de/gb/ormmocere/o0.html
(2) Appleby, A; Phil Trans R Soc London 1996, VA354, P1681
(3) Bailly; Polymer 1987, V28, P1009 HCA
(4) Biddick; US 3751304 A 1973 HCA
(5) Bishop; Macromolecules 1985, V18, P86 HCA
(6) Cui; Separation and Purification Technology 1998, V14, P145 HCA
(7) Day; Journal of Analytical and Applied Pyrolysis 1990, V18, P163 HCA
(8) Dhar, H; J Electroanal Chem 1993, V357, P237 HCA
(9) Drzewinski; Journal of Applied Polymer Science 1985, V30, P4753 HCA
(10) Engelhardt; No publication given 1987, P332
(11) Faure; Symp on New Mat for Fuel Cell & Mod Battery Sys 1997, P819
(12) Hudson; Macromolecules 1992, V25, P1759 HCA
(13) Iwasaki; US 6087031 A 2000 HCA
(14) Jin; British Plym J 1984, V17, P4
(15) Kerres; 3rd Symp on New Materials for Elect Sys 1993, P231
(16) Knudsen; Solid State Ionics 1993, V61, P153 HCA
(17) Kobayashi; Solid State Ionics 1998, V106, P219 HCA
(18) Kreuer; Electrochemical Society Proceedings 1995, V95, P241
(19) Kreuer, K; Chemistry of Materials 1996, V8, P610 HCA
(20) Lassegues, J; No publication given 1992, P311 HCA
(21) Mikhailenko; J Chem Soc Faraday Trans 1998, V94, P1613 HCA
(22) Mikhailenko; Solid State Ionics 1997, P99
(23) Nolte; Journal of Membrane Science 1993, V83, P211 HCA
(24) Noshay; Journal of Applied Polymer Science V20, P1885 HCA
(25) O'Gara; Journal of Polymer Science B: Polymer Physics V25, P1519 HCA
(26) Park; Denki Kagaku 1996, V64, P743 HCA
(27) Polak; US 4594297 A 1986 HCA
(28) Polak; US 4797185 A 1989 HCA
(29) Pourcelly; No publication given 1992, P294 HCA

(30) Savadogo, O; Journal of New Material for Electrochem Sys 1998, V1, P47 HCA
(31) Schulz; Reactive & Functional Polymers 1996, V30, P353 HCA
(32) Shoesmith; Journal of Power Sources 1994
(33) Sivashinsky; J App Poly Sci 1983, V28, P3236
(34) Sone; J Electrochem Soc 1996, V143, P1254 HCA
(35) Steck; 2nd S on New Mat for Fuel Cell & Mod Battery Sys 1997, P792 HCA
(36) Tazi; 3rd S on New Mat for Electrochem Sys 1999, P259
(37) Wainwright; J Electrochem Soc 1995, V142, P121
(38) Yen; US 5795496 A 1998 HCA
(39) Zaidi; 3rd S on New Mat For Electrochm Sys 1999, P225

L65 ANSWER 4 OF 14 HCA
AN 140:271857 HCA Full-text
TI Studies on a novel polymer electrolyte
AU Wang, Zhanliang; Tang, Zhiyuan
CS School of Chemical Engineering and Technology, Tianjin University, Tianjin, 300072, Peop. Rep. China
SO Gaofenzi Xuebao (2003), (6), 847-851
CODEN: GAXUE9; ISSN: 1000-3304
PB Kexue Chubanshe
DT Journal
LA Chinese
AB A copolymer poly(Me methacrylate-acrylonitrile-lithium methacrylate) (PMAML) was synthesized by soln. polymn. It was then blended with PVDF for prepg. porous membranes by soln. casting, and the non-solvent or extn. step was unnecessary in this process. A novel gelled polymer electrolyte. based on the blend of PMAML and PVDF was obtained by soaking the polymer membrane in org. liq. electrolytes. The compn. of the copolymer was detd. from its 1H-NMR spectrum, and the result showed that the molar ratio of Me methacrylate:acrylonitrile:lithium methacrylate was about 68.6:21.5:9.9. The surface structure of the polymer film was characterized by SEM. The pores were well distributed in the surface of the membrane and the pore size was about 5 μ m. The ionic cond. of the polymer electrolyte was measured by the AC impedance method, and it was about 2.5 + 10-3 S·cm-1 room temp. The electrochem. stability window was carried out on the stainless steel electrode with lithium metal electrodes as the ref. and counter electrodes by the linear sweep voltammetry method. The polymer electrolyte was electrochem. stable under 4.5 V. The diffusion coeff. of salt in the polymer electrolyte was measured using Li/GPE (gel polymer electrolyte)/Li non-blocking cell by the restricted diffusion expt., and the value was about 8.12 + 10-7 cm2·s-1. The coulombic efficiency of the lithium ion battery with the polymer electrolyte in the initial charge-discharge cycle was calcd. to be about 89%, and

the discharge capacity of the first five cycles changed only in a small range. The test results display that the polymer electrolyte based on blends of PMAML and PVDF was electrochem. stable and can be used in lithium ion batteries .

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 76

ST methacrylate acrylonitrile copolymer PVDF blend polymer electrolyte lithium battery

IT Fluoropolymers, uses
(acrylonitrile-lithium methacrylate-Me methacrylate copolymer blend; prepn. and properties of acrylonitrile-lithium methacrylate-Me methacrylate-based polymer electrolyte)

IT Polymer blends
(acrylonitrile-lithium methacrylate-Me methacrylate copolymer-PVDF; prepn. and properties of acrylonitrile-lithium methacrylate-Me methacrylate-based polymer electrolyte)

IT Ionic conductivity
Polymer electrolytes
Polymer morphology
(prepn. and properties of acrylonitrile-lithium methacrylate-Me methacrylate-based polymer electrolyte)

IT 667446-97-1P, Acrylonitrile-lithium methacrylate-methyl methacrylate copolymer
(PVDF blend; prepn. and properties of acrylonitrile-lithium methacrylate-Me methacrylate-based polymer electrolyte)

IT 24937-79-9, PVDF
(acrylonitrile-lithium methacrylate-Me methacrylate copolymer blend; prepn. and properties of acrylonitrile-lithium methacrylate-Me methacrylate-based polymer electrolyte)

L65 ANSWER 5 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 140:7019 HCA Full-text

TI Characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles

AU Kim, Kwang Man; Ko, Jang Myoun; Park, Nam-Gyu; Ryu, Kwang Sun; Chang, Soon Ho

CS Basic Research Laboratory, Power Source Devices Team, Electronics and Telecommunications Research Institute (ETRI), Yusong, Daejon, 305-350, S. Korea

SO Solid State Ionics (2003), 161(1,2), 121-131
CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier Science B.V.

DT Journal
LA English
AB Various amts. of nanoscale rutile TiO2 particle are used as fillers in the prepn. of poly(vinylidene fluoride-co- hexafluoropropylene) (PVDF-HFP)-based porous polymer electrolytes. Phys., electrochem. and transport properties of the electrolyte films are studied in terms of surface morphol., thermal and cryst. properties, swelling behavior after absorbing electrolyte soln., chem. and electrochem. stabilities, ionic cond., and compatibility with lithium electrode. Contrary to reported inorg. fillers showing the max. content <50%, the self-supporting polymer electrolyte films can be obtained even when using higher content of 70% rutile TiO2 nanoparticles. The phys. and electrochem. properties of polymer membrane are highly improved by the addn. of TiO2 nanoparticles as good dispersion of fillers, low liq. uptake but adequate ionic cond., excellent electrochem. stability, and stabilized interfacial resistance with lithium electrode. An emphasis should be put on the fact that the sufficient ionic cond. obtained is led by the liq. medium within nano-pores as well as effective ion transport supported by rutile TiO2. As a result, the sample with 30-40% rutile TiO2 is confirmed as the best polymer electrolyte for rechargeable lithium batteries.
IT 13463-67-7, ST 480, uses
(composite films with KynarFlex 2801 and gels with electrolyte solns.; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO2 nanoparticles)
RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (CA INDEX NAME)

O═Ti═O

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST vinylidene fluoride hexafluoropropylene copolymer polymer electrolyte lithium composite rutile; titania nanoparticle lithium secondary battery polymer gel electrolyte carbonate; SEM DSC melting crystn enthalpy copolymer electrolyte cond swelling
IT Powders
(ceramic, nanoparticles; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO2 nanoparticles)
IT Battery electrolytes
Electric impedance

Gels
Polymer electrolytes
(characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Fluoro rubber
(hexafluoropropene-vinylidene fluoride, KynarFlex 2801, composite films with ST 480 and gels with electrolyte solns.; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Electric resistance
(interfacial; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Ionic conductivity
Surface structure
(of TiO_2 composite polymer gel electrolytes; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Swelling, physical
(of TiO_2/ polymer composites with electrolyte solns.; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Electric current-potential relationship
(of composite polymer gel electrolytes with and without TiO_2; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Secondary batteries
(polymer electrolytes for; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT Ceramics
(powders, nanoparticles; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT 7439-93-2, Lithium, uses 12597-68-1, Stainless steel, uses
(characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT 13463-67-7, ST 480, uses
(composite films with KynarFlex 2801 and gels with electrolyte solns.; characterization of poly(vinylidene fluoride-co-

hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate (LiPF6)
(electrolyte; characterization of poly(vinylidene fluoride-co-hexafluoropropylene)-based polymer electrolyte filled with rutile TiO_2 nanoparticles)

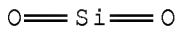
RE

(1) Abbrent, S; Polymer 2001, V42, P1407 HCA
(2) Abraham, K; Chem Mater 1997, V9, P1978 HCA
(3) Aihara, Y; Phys Chem Chem Phys 2002, V4, P3443 HCA
(4) Appetecchi, G; Electrochim Acta 2000, V45, P1481 HCA
(5) Appetecchi, G; J Electroanal Chem 1999, V463, P248 HCA
(6) Best, A; Solid State Ionics 1999, V126, P269 HCA
(7) Caillon-Caravanier, M; J Power Sources 2002, V107, P125 HCA
(8) Capiglia, C; Solid State Ionics 2000, V131, P291 HCA
(9) Christie, A; J Power Sources 1998, V74, P77 HCA
(10) Chung, S; J Power Sources 2001, V97-98, P644 HCA
(11) Croce, F; Electrochim Acta 2001, V46, P2457 HCA
(12) Croce, F; Nature 1998, V394, P456 HCA
(13) Croce, F; Solid State Ionics 2000, V135, P47 HCA
(14) Gozdz, A; US 5418091 1995 HCA
(15) Gregorio, R; J Polym Sci, Part B, Polym Phys 1994, V32, P859 HCA
(16) Ivanova, T; Solid State Ionics 2001, V138, P227 HCA
(17) Jones, P; Trans Faraday Soc 1971, V67, P2669 HCA
(18) Kim, K; Macromol Chem Phys 2001, V202, P866 HCA
(19) Kim, K; Polymer 2002, V43, P3951 HCA
(20) Kumar, B; J Power Sources 2001, V96, P337 HCA
(21) Magistris, A; Solid State Ionics 2002, V152-153, P347 HCA
(22) Marand, H; J Polym Sci, Part B, Polym Phys 1988, V26, P1361 HCA
(23) Michot, T; Electrochim Acta 2000, V45, P1347 HCA
(24) Music, S; Mater Sci Eng, B, Solid-State Mater Adv Technol 1997, V47, P33
(25) Park, N; J Phys Chem, B 1999, V103, P3308 HCA
(26) Prest, W; J Appl Phys 1978, V49, P5042 HCA
(27) Rosenberg, Y; J Appl Polym Sci 1991, V43, P535 HCA
(28) Saito, Y; J Phys Chem, B 2002, V106, P7200 HCA
(29) Sajkiewicz, P; Eur Polym J 1999, V35, P1581 HCA
(30) Scrosati, B; J Electrochem Soc 2000, V147, P1718 HCA
(31) Song, J; J Electrochem Soc 2002, V149, PA1230 HCA
(32) Song, J; J Power Sources 1999, V77, P183 HCA
(33) Tarascon, J; Solid State Ionics 1996, V86-88, P49 HCA
(34) Welch, G; J Polym Sci, Polym Phys Ed 1976, V14, P1683 HCA
(35) Zhang, J; Polymer 2001, V42, P3697 HCA

L65 ANSWER 6 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 138:58808 HCA Full-text

TI Effect of inorganics on polymer electrolytes for lithium
batteries
AU Bai, Ying; Wu, Feng; Ren, Xu-mei
CS School of Chemical Engineering and Materials Science, Beijing
Institute of Technology, National Development Center for Hi-Tech
Green Materials, Beijing, 100081, Peop. Rep. China
SO Dianchi (2002), 32(Suppl.), 56-57
CODEN: DNCHEP; ISSN: 1001-1579
PB Dianchi Zazhishe
DT Journal
LA Chinese
AB On the basis of the prepn. of the PVDF-HFP porous films by a phase-inversion method, the composite polymer electrolyte membranes with SiO_2 or zeolite additive were prepd., which could be used in the secondary lithium batteries. The film morphologies and the charge-discharge features were characterized with SEM and electrochem. test, resp. The anal. of the n-BuOH uptakes showed that the composite polymer films had higher porosities and could meet the demands of the lithium secondary batteries.
IT 7631-86-9, Silica, uses
(effect of inorgs. on polymer electrolytes for lithium batteries)
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium battery polymer electrolyte inorg additive effect
IT Battery electrolytes
Polymer electrolytes
(effect of inorgs. on polymer electrolytes for lithium batteries)
IT Zeolites (synthetic), uses
(effect of inorgs. on polymer electrolytes for lithium batteries)
IT Phase
(inversion; effect of inorgs. on polymer electrolytes for lithium batteries)
IT Secondary batteries
(lithium; effect of inorgs. on polymer electrolytes for lithium batteries)
IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer

(effect of inorgs. on polymer electrolytes for lithium
batteries)
IT 7631-86-9, Silica, uses
(effect of inorgs. on polymer electrolytes for lithium
batteries)

L65 ANSWER 7 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 137:217914 HCA Full-text
TI Gel polymer electrolytes prepared with porous
membranes based on an acrylonitrile/methyl methacrylate copolymer
AU Min, Hyo-Sik; Kang, Dong-Wan; Lee, Doo-Yeon; Kim, Dong-Won
CS Department of Chemical Technology, Hanbat National University,
Taejon, 305-719, S. Korea
SO Journal of Polymer Science, Part B: Polymer Physics (2002
), 40(14), 1496-1502
CODEN: JPBPEM; ISSN: 0887-6266
PB John Wiley & Sons, Inc.
DT Journal
LA English
AB Porous membranes based on acrylonitrile-Me methacrylate copolymer were prepd. by a phase-inversion method. Microstructures of the porous membranes were controlled through the variation of the evapn. drying time before immersion in a nonsolvent bath. Gel polymer electrolytes were prepd. from these porous membranes via soaking in an org. electrolyte soln. They encapsulated the electrolyte soln. well without solvent leakage and maintained good mech. properties that allowed the prepn. of thin films (.apprx.23 .mu.m). These systems showed acceptable ionic cond. values (>6.0 + 10-4 S/cm) at room temp. and sufficient electrochem. stability over 4.4 V that allowed applications in lithium-ion polymer batteries.
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 52
ST gel electrolyte porous membrane acrylonitrile methacrylate
copolymer; lithium battery electrolyte
acrylonitrile methacrylate copolymer
IT Secondary batteries
(lithium; gel polymer electrolytes obtained
with porous membranes based on acrylonitrile-Me methacrylate
copolymer for)
IT Electric current-potential relationship
Ionic conductivity
Membranes, nonbiological
Polymer electrolytes
Polymer morphology
Porosity
(prepn. and properties of gel polymer
electrolytes obtained with porous membranes based on

acrylonitrile-Me methacrylate copolymer)
IT 14283-07-9P, Lithium tetrafluoroborate 21324-40-3P, Lithium hexafluorophosphate
(acrylonitrile-Me methacrylate copolymer complexes; prepn. and properties of gel polymer electrolytes)
IT 7439-93-2DP, Lithium, complexes with acrylonitrile-Me methacrylate copolymer 24968-79-4DP, Acrylonitrile-methyl acrylate copolymer, lithium complexes
(prepn. and properties of gel polymer electrolytes)
RE
(1) Bottino, A; J Membr Sci 1991, V57, P1 HCA
(2) Gavelin, P; J Polym Sci Part B 2001, V39, P1519 HCA
(3) Huang, H; J Electrochem Soc A 2001, V148, P279
(4) Kim, C; J Appl Polym Sci 1996, V60, P1773 HCA
(5) Kim, D; Solid State Ionics 1998, V106, P329 HCA
(6) Kubota, N; J Appl Polym Sci 2000, V76, P12 HCA
(7) Magistris, A; Electrochim Acta 2001, V46, P1635 HCA
(8) Magistris, A; J Power Sources 2001, V97, P657
(9) Michot, T; Electrochim Acta 2000, V45, P1347 HCA
(10) Peramunage, D; J Electrochem Soc 1995, V142, P1789 HCA
(11) Slane, S; J Power Sources 1995, V55, P7 HCA
(12) Sung, H; J Electrochem Soc 1998, V145, P1207 HCA
(13) Tarascon, J; Solid State Ionics 1996, V86, P46
(14) Tsunemi, K; Electrochim Acta 1983, V28, P591
(15) Watanabe, M; J Polym Sci Polym Phys Ed 1983, V21, P939 HCA

L65 ANSWER 8 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 134:298333 HCA Full-text
TI New fabrication method of the composite membrane for polymer electrolyte membrane fuel cell
AU Kwak, S. H.; Peck, D. H.; Chun, Y. G.; Kim, C. S.; Yoon, K. H.
CS Dept. of Ceramic Engineering, Yonsei University, Seoul, 120-749, S. Korea
SO Journal of New Materials for Electrochemical Systems (2001), 4(1), 25-29
CODEN: JMESFQ; ISSN: 1480-2422
PB Journal of New Materials for Electrochemical Systems
DT Journal
LA English
AB New fabrication method of composite membrane for polymer electrolyte membrane fuel cell (PEMFC) was developed using porous PTFE membrane and perfluorosulfonylfluroride copolymer resin. The perfluorosulfonylfluroride copolymer resin was hot pressed into a sheet. New preparative technique was adopted by sandwich porous PTFE membrane in the pre-formed copolymer sheet. The porous PTFE membrane is easily embedded into the copolymer sheet, due to the melt-

fabricable property of the pre-formed copolymer sheet. The Membrane/Electrode Assembly (MEA) was made using the decal method, with 20% Pt/C and the composite membrane. The morphol. of MEA has been investigated by SEM. The performance characteristics of the MEA have been evaluated in a single cell.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

IT Fuel cell electrodes
Fuel cell electrolytes
(fabrication method of the composite membrane for polymer electrolyte membrane fuel cell)

IT Fluoropolymers, uses
(fabrication method of the composite membrane for polymer electrolyte membrane fuel cell)

IT 7440-06-4, Platinum, uses
(catalyst; fabrication method of the composite membrane for polymer electrolyte membrane fuel cell)

IT 9002-84-0, PTFE 333997-94-7, Nafion R 1100
(fabrication method of the composite membrane for polymer electrolyte membrane fuel cell)

RE
(1) Chun, Y; J Power Sources 1998, V71, P174 HCA
(2) Jiang, J; J Membrane Science 1997, V132, P273 HCA
(3) Kim, C; Int J Hydrogen Energy 1998, V23, P1045 HCA
(4) Nouel, K; Electrochim Acta 1998, V43, P2381 HCA
(5) Peck, D; J New Mat Electrochem Systems 1999, V2, P121 HCA
(6) Pourcelly, G; Solids, membranes and gelsmaterials and devices 1992, P294 HCA
(7) Savadogo, O; J New Mat Electrochem Systems 1998, V1, P47 HCA
(8) Wilson, M; J App Electrochem 1992, V22, P1 HCA

L65 ANSWER 9 OF 14 HCA
AN 134:43041 HCA Full-text
TI Recast Nafion-117 thin film from water solution
AU Laporta, M.; Pegoraro, M.; Zanderighi, L.
CS Department of Industrial Chemistry and Chemical Engineering, Politecnico of Milano, Milan, 20133, Italy
SO Macromolecular Materials and Engineering (2000), 282, 22-29
CODEN: MMENFA; ISSN: 1438-7492
PB Wiley-VCH Verlag GmbH
DT Journal
LA English

AB Perfluorosulfonated ionomer (PFSI) dispersions in various solvents, usually mixts. of org. compds. and water, were used to prep. the membrane-electrode system in polymer electrolyte membrane fuel cells (PEMFC), the aim being to increase performance by improving the triple contact of graphite (electron conducting material). Pt (hydrogen dissocn. catalyst) and ionomeric membrane (proton conducting). When using PFSI dispersions in water-org. solvent mixt., care must be taken not to poison the Pt catalyst through org. decompn. products, a consequence of the thermal treatment of the electrode-polymer system bonded with PFSI dispersion. In the present study some procedures for prepg. Nafion water dispersion, starting from a Nafion-117 membrane, are described. The morphol. characteristics of the prepd. dispersions were compared with Nafion com. dispersion (NCD). Moreover, membranes with a thickness of 5-20 .mu.m were prepd. and characterized, using both the obtained and the NCD dispersions. The obtained data showed that Nafion water dispersion, which can be used to prepd. the membrane/electrode system, results in thin membranes that absorb more water than NCD membranes, and have equal and/or higher proton conduction than the NCD.

CC 38-3 (Plastics Fabrication and Uses)

IT Dispersion (of materials)
Electric conductivity
Glass transition temperature
Membranes, nonbiological
Polymer morphology
(recast Nafion-117 thin film from water soln.)

IT 66796-30-3, Nafion 117
(prepn., elec. and thermal properties, and morphol. of Nafion film from water soln.)

RE
(1) Aldebert, P; Macromolecules 1986, V19, P2651 HCA
(2) Chu, D; J Appl Electr 1990, V20, P157 HCA
(3) Du Pont; Brochure E-24084
(4) Du Pont; Product information
(5) Dutta, B; J Membrane Sci 1990, V54, P51 HCA
(6) Gebel, G; Macromolecules 1987, V20, P1425 HCA
(7) Gierke, T; J Polym Sci, Polym Phys Ed 1981, V19, P1687 HCA
(8) Grot, W; US 4433082 1982 HCA
(9) Heiter Wirgun, C; Macromolecules 1996, V120, P1
(10) Hodge, I; Macromolecules 1978, V11, P289 HCA
(11) Kyu, T; Can J Chem 1983, V61, P680 HCA
(12) Lundberg, R; J Polym Sci, Polym Lett Ed 1984, V22, P377 HCA
(13) Martin, C; US 4731263 1986 HCA
(14) Martin, C; Anal Chem 1982, V54, P1641
(15) Moore, R; Anal Chem 1986, V58, P2569 HCA
(16) Moore, R; Macromolecules 1988, V21, P1334 HCA

(17) Samms, S; J Electrochem Soc 1996, V143, P1498 HCA
(18) Surowiec, J; J Therm Anal 1988, V33, P1097
(19) Wilkie, C; J Appl Sci 1991, V42, P901 HCA
(20) Yeo, S; J Appl Polym Sci 1977, V21, P875 HCA
(21) Zawodzinski, T; J Electrochem Soc 1993, V140, P1981 HCA

L65 ANSWER 10 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 133:254873 HCA Full-text
TI Novel microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries
AU Wang, Hongpeng; Huang, Haitao; Wunder, Stephanie L.
CS Department of Chemistry, Temple University, Philadelphia, PA, 19122, USA
SO Journal of the Electrochemical Society (2000), 147(8), 2853-2861
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB Novel microporous poly(vinylidene fluoride)-hexafluoropropylene copolymer (PVDF-HFP) blend electrolyte/electrode films were obtained as the result of phase sepn. between PVDF-HFP and PEO oligomer additives, which were cast from a common solvent. Upon solvent evapn. and removal of the additives, an interconnected microporous morphol. was formed. The additives can either be removed from the films by vacuum evapn. or methanol extn. The conductivities of the methanol extd. microporous (pore sizes range from 1 to 5 .mu.m) films formed from PVDF-HFP/PEO oligomer blends after electrolyte activation are more than 70% higher than those of the methanol extd. nanoporous (pore size in range from 10 to 100 nm) films prepd. from PVDF-HFP/dibutyl phthalate blends. Microporous films formed by vacuum evapn. had conductivities similar to solvent extd. nanoporous separators. Battery performance tests were carried out using lithium cobalt dioxide as the cathode and mesocarbon microbeads as the anode. The cells prepd. using extd. microporous PVDF-HFP/PEO oligomer blend films as separators show more than 40% higher specific discharge capacity at the C/2 rate, and 70% higher rate capability than those using extd. nanoporous separators.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium battery polyvinylidene fluoride blend electrolyte
IT Secondary batteries
(lithium; microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)
IT Battery electrolytes
Electric conductivity
Ionic conductivity

Polymer electrolytes
Polymer morphology
Secondary battery separators
(microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT Fluoropolymers, uses
Polymer blends
(microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT Polyoxyalkylenes, uses
(microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT Evaporation
(vacuum; microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT 7631-86-9, Fumed silica, uses
(colloidal; microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT 7440-44-0, Carbon, uses
(mesocarbon microbeads; microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
(microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

IT 84-74-2, Dibutyl phthalate 9004-93-7, Polyethylene glycol bis(2-ethylhexanoate) 25322-68-3, Peo 106392-12-5
(microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

RE
(1) Albinsson, I; J Chem Phys 1992, V96, P681 HCA
(2) Andrieu, X; US 5811205 1998 HCA
(3) Andrieu, X; Proceedings of the 38th International Power Source Symposium 1998, P266 HCA
(4) Anon; Polymer Electrolytes Reviews I 1987
(5) Appetecchi, G; J Electroanal Chem 1999, V463, P248 HCA
(6) Appetecchi, G; J Electrochem Soc 1996, V143, P6 HCA
(7) Armand, M; Solid State Ionics 1983, V9/10, P745
(8) Aurbach, D; J Phys Chem B 1997, V101, P2195 HCA
(9) Bohnke, O; Solid State Ionics 1993, V66, P105 HCA
(10) Choe, H; Electrochim Acta 1995, V40, P2289 HCA
(11) Christie, A; J Power Sources 1998, V74, P77 HCA
(12) Christie, A; J Power Sources 1998, V74, P77 HCA
(13) Evans, J; Polymer 1987, V28, P2324 HCA

(14) Gauthier, M; J Electrochem Soc 1985, V132, P1333 HCA
(15) Gozdz, A; US 5540741 1997 HCA
(16) Groce, F; Electrochim Acta 1994, V39, P2187
(17) Gu, G; Electrochem Solid-State Lett 1999, V2, P486 HCA
(18) Guenard, V; Biomaterials 1991, V12, P259 MEDLINE
(19) Hooper, A; Solid State Ioncs 1983, V9/10, P1161
(20) Hudson, M; J Electrochem Soc 1995, V142, P4013 HCA
(21) Kim, C; J Polym Sci: Part B: Polym Phys 1996, V34, P2709 HCA
(22) Kim, D; Electrochem Solid-State Lett 1999, V2, P256 HCA
(23) Koksbang, R; J Appl Electrochem 1991, V21, P301 HCA
(24) Lee, K; J Polym Sci: Part B: Polym Phys 1999, V37, P247 HCA
(25) Levi, M; J Electroanal Chem 1997, V421, P79 HCA
(26) Levi, M; J Electrochem Soc 1999, V146, P1279 HCA
(27) Levi, M; J Phys Chem B 1997, V101, P4630 HCA
(28) Li, J; Macromolecules 1993, V26, P4544 HCA
(29) MacGlashan, G; Nature 1999, V398, P792 HCA
(30) Narayanan, S; J Electrochem Soc 1993, V140, P1854 HCA
(31) Ohno, H; Polym Bull 1982, V7, P271 HCA
(32) Osaka, T; The Electrochemical Society Proceedings Series 1996, PV 96-17, P1
(33) Soh, Y; Polymer 1995, V36, P3711 HCA
(34) Soo, P; J Electrochem Soc 1999, V146, P32 HCA
(35) Tarascon, J; Solid State Ionics 1996, V86-88, P49 HCA
(36) Thomas, M; J Electrochem Soc 1986, V132, P1521
(37) Tsuchida, E; Electrochim Acta 1983, V28, P591 HCA
(38) Van De Witte, P; J Polym Sci: Part B: Polym Phys 1996, V34, P2553 HCA
(39) Wang, H; Mater Res Soc Symp Proc 1999, V548, P347 HCA
(40) Wang, H; Solid State Ionics, Submitted
(41) Wen, T; J Electrochem Soc 1998, V145, P3450 HCA
(42) Williams, J; J Polym Sci: Part B: Polym Phys 1985, V23, P1941
(43) Yarovoy, Y; Solid State Ionics 1999, V118, P301 HCA
(44) Zhu, X; Macromolecules 1999, V32, P277 HCA
(45) Zoppi, R; Polymer 1999, V40, P3275 HCA

L65 ANSWER 11 OF 14 HCA
AN 121:137516 HCA Full-text
OREF 121:24822h,24823a
TI Porous electrolyte substrates, their manufacture, and solid electrolytes
IN Soejima, Hiroshi
PA Mitsubishi Cable Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 06150939	A	19940531	JP 1992-322556	19921105 <--
PRAI	JP 1992-322556		19921105 <--		

AB The substrates are porous crosslinked polymers contg. polar units and having av pore diam. <50 μ m. The substrates are prepd. by forming a blend comprising a polymer contg. polar units and a polymer without polar units, crosslinking the polar unit contg. polymer, and removing the polar unit free polymer. Solid electrolytes contain the porous substrate are useful for laminar batteries.

IC ICM H01M006-18
ICS C08L101-00; H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrolyte porous polymer substrate; electrolyte crosslinked polar polymer substrate

IT Battery electrolytes
(porous crosslinked polymer substrates for, compns. and manuf. of)

IT 9002-89-5, Poly(vinyl alcohol) 25322-68-3, Peo 25322-68-3D, Peo, cyano terminated
(crosslinked porous, electrolyte substrates from, for batteries)

IT 7791-03-9P, Lithium perchlorate
(electrolyte, porous polymer substrates for, structure and manuf. of, for laminar batteries)

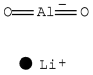
L65 ANSWER 12 OF 14 HCA COPYRIGHT 2008 ACS on STN
AN 119:184682 HCA Full-text
OREF 119:32943a,32946a
TI Interfacial phenomena in polymer-electrolyte cells : lithium passivation and cycleability
AU Croce, F.; Scrosati, B.
CS Dip. Chim., Univ. Roma 'La Sapienza', Rome, 00185, Italy
SO Journal of Power Sources (1993), 43(1-3), 9-19
CODEN: JPSODZ; ISSN: 0378-7753
DT Journal
LA English
AB The properties of Li electrode interfaces in polymer electrolytes of PEO and $LiClO_4$ composites with finely dispersed ceramic γ-$LiAlO_2$ or cryst. zeolite were studied by impedance spectroscopy. Passivation of Li electrodes is an active phenomenon in nonpurified PEO-Li salt

electrolytes. The changes in the spectra as a function of storage time was interpreted using a solid-polymer layer (SPL) model assuming that passivation of the Li surface may be described by a combination of solid inorg. and polymeric layers. The time evolution of the impedance parameters indicates that a passivation film grows rapidly on Li. The ceramic and zeolite in the electrolyte provided for control of morphol. and growth rate of the passivation layer; ceramic composite electrolytes should be the preferred electrolyte for Li-polymer batteries.

IT 12003-67-7, Aluminum lithium oxide (AlLiO2)
(γ-, composites, with PEO-lithium salt, electrolytes, lithium anode passivation in, control of, for batteries
)

RN 12003-67-7 HCA

CN Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 57

ST lithium anode passivation PEO electrolyte; ceramic PEO electrolyte composite battery; zeolite PEO electrolyte composite battery

IT Battery electrolytes
(PEO-lithium salt ceramic or zeolite composites, lithium anode passivation in, control of)

IT Zeolites, uses
(4A, composites, with PEO-lithium salt, electrolytes, lithium anode passivation in, control of, for batteries)

IT Passivation
(electrochem., of lithium anodes, control of, PEO-lithium salt ceramic or zeolite composite electrolytes for)

IT 7439-93-2, Lithium, uses
(anodes, passivation of, in PEO-lithium salt electrolytes, ceramic and zeolite composites for control of, in batteries)

IT 7439-93-2D, Lithium, PEO complexes 25322-68-3D, PEO, lithium complexes
(composites, with ceramics and zeolite, electrolytes, lithium anode passivation in, control of, for batteries

)

IT 7791-03-9, Lithium perchlorate ($LiClO_4$)
(electrolyte, with PEO, composites with ceramics and zeolite, lithium anode passivation in, control of, for batteries)

IT 12003-67-7, Aluminum lithium oxide ($AlLiO_2$)
(γ-, composites, with PEO-lithium salt, electrolytes, lithium anode passivation in, control of, for batteries
)

L65 ANSWER 13 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 114:71026 HCA Full-text

OREF 114:11973a,11976a

TI Effects of surface roughening of Nafion on electrode plating, mechanical strength, and cell performances for SPE water electrolysis

AU Sakai, T.; Kawami, Y.; Takenaka, H.; Torikai, E.

CS Gov. Ind. Res. Inst., Ikeda, 563, Japan

SO Journal of the Electrochemical Society (1990), 137(12), 3777-83
CODEN: JESOAN; ISSN: 0013-4651

DT Journal

LA English

AB The most suitable conditions for surface-roughening Nafion membranes used as solid polymer electrolytes (SPE) were examd. for their effect on electrode plating, mech. strength, and cell performance for water electrolysis. Though the surface roughening by sand-blasting caused a considerable lowering of mech. strength and had no influence on the roughness factor of the platinum electrode plated on the membrane surface, it was very effective for enlarging the reaction interface between SPE and the electrode and for forming a porous structure of the electrode, which facilitated the release of evolving gases from the electrode. The formation of porous structure was very important for the electrolysis at higher c.d., because it prevented decrease in mech. strength of the SPE-electrode composite due to void formation at the interface, increase in resistance due to gas bubbles, and decrease in current efficiency due to permeation of produced gases through the membrane. In addn., surface roughening by sputter etching was conducted. The etching at 400 W for 30 s under a 60% Ar-40% O_2 mixed gas gave a fine roughness of ca. 6000 Å, on which metal particles with almost the same dimensions as the roughness were deposited. The finely controlled roughening also caused a decrease in mech. strength but could not improve the cell voltage, because the reaction interface between the SPE and the electrode was not enlarged, showing that a roughness of 3-5 .mu.m was more suitable.

CC 72-2 (Electrochemistry)

ST surface roughing effect Nafion electrode plating; solid

polymer electrolyte water analysis Nafion
IT Electrolytic cells
(for water electrolysis, with Nafion solid polymer electrolyte, surface roughening of Nafion in relation to)
IT Sandblasting
(surface morphol. of Nafion membrane of solid polymer electrolyte in water electrolysis in relation to)
IT Sputtering
(etching, in roughening of Nafion for solid polymer electrolyte electrolysis of water)
IT Etching
(sputter, in roughening of Nafion for solid polymer electrolyte electrolysis of water)
IT 7440-06-4, Platinum, uses and miscellaneous
(deposition of, of Nafion membrane, for solid polymer electrolyte water electrolysis)
IT 7732-18-5, Water, reactions
(electrolysis of, solid polymer electrolyte for, surface roughening of Nafion in relation to)
IT 66796-30-3, Nafion 117
(surface roughening of, electrode plating and mech. strength and solid polymer electrolyte water electrolysis in relation to)

L65 ANSWER 14 OF 14 HCA
AN 113:234579 HCA Full-text
OREF 113:39538h,39539a
TI The lithium polymer electrolyte battery. IV. Use of composite electrolytes
AU Croce, F.; Capuano, F.; Selvaggi, A.; Scrosati, B.; Scibona, G.
CS Dip. Chim., Univ. Roma 'La Sapienza', Rome, Italy
SO Journal of Power Sources (1990), 32(4), 381-8
CODEN: JPSODZ; ISSN: 0378-7753
DT Journal
LA English
AB The interface of a Li anode and a polymer electrolyte was stabilized when polymer electrolytes having better morphol. characteristics than $(PEO)_8LiClO_4$ were used. The morphol. was improved by addn. of an inert filler (small grain size β''- alumina) to $(PEO)_8LiClO_4$. The cond. both electrolytes is comparable, but the passivation of the Li anode is much lower when in contact with the hard, composite electrolyte. A $Li/(PEO)_8LiClO_4$-10% β''-alumina/TiS_2 battery was cycled at 100° at C/5 rate (C = nominal capacity). The 2nd cycle shows well-defined plateaus and a cycling efficiency of 92%; at cycle

75, the plateaus are still well-defined and the overvoltage is similar to that obsd. in the 1st cycle, but the cycling efficiency was 70%. A Li/(PEO)8LiClO4/TiS2 battery failed after 35 cycles due to poor charge recovery and dendrite shorting.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

ST lithium polyethylene oxide electrolyte battery; PEO lithium perchlorate electrolyte battery; alumina beta PEO electrolyte battery

IT Batteries, secondary
(lithium/PEO-lithium perchlorate-β''-alumina electrolyte/titanium disulfide, performance of)

IT Electric conductivity and conduction
(of PEO-lithium perchlorate electrolyte contg. β''-alumina, at glass transition temp.)

IT Electric impedance
(of lithium-PEO/lithium perchlorate-β''-alumina electrolyte, storage time effect on)

IT 12005-16-2
(electrolyte additive, PEO lithium perchlorate complex contg., for lithium-titanium sulfide batteries)

IT 7791-03-9, Lithium perchlorate
(electrolyte, with PEO, contg. β''-alumina additive, for lithium-titanium sulfide batteries)

IT 7439-93-2D, Lithium, poly(ethylene oxide) complexes 25322-68-3D, PEO, lithium complexes
(electrolytes, contg. perchlorate, with β''-alumina additive, for lithium-titanium sulfide batteries)

=> D L66 1-16 BIB ABS HITSTR HITIND RE

L66 ANSWER 1 OF 16 HCA

AN 143:289426 HCA Full-text

TI Method of fabrication of lithium cationic single-ion conducting inorganic filler-containing composite polymer electrolyte for lithium secondary battery

IN Lee, Young Gi; Kim, Kwang Man; Ryu, Kwang Sun; Chang, Soon Ho

PA Electronics and Telecommunications Research Institute, S. Korea

SO U.S. Pat. Appl. Publ., 13 pp., Cont.-in-part of U.S. Ser. No. 750,152.
CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050196677	A1	20050908	US 2005-97730	20050401 <--
	US 7399556	B2	20080715		
	US 20040214089	A1	20041028	US 2003-750152	20031230 <--
	US 7211352	B2	20070501		
	KR 2005103068	A	20051027	KR 2004-28470	20040424
	EP 1598896	A1	20051123	EP 2005-251844	20050324
	EP 1598896	B1	20070502		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
	AT 361553	T	20070515	AT 2005-251844	20050324
	JP 2005310795	A	20051104	JP 2005-125449	20050422
PRAI	US 2003-750152	A2	20031230 <--		
	KR 2004-28470	A	20040424		
	KR 2003-26420	A	20030425 <--		

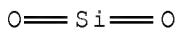
AB Provided are a composite polymer electrolyte for a lithium secondary battery in which a composite polymer matrix multi-layer structure composed of a plurality of polymer matrixes with different pore sizes is impregnated with an electrolyte soln., and a method of manufg. the same. Among the polymer matrixes, a microporous polymer matrix with a smaller pore size contains a lithium cationic single-ion conducting inorg. filler, thereby enhancing ionic cond., the distribution uniformity of the impregnated electrolyte soln., and maintenance characteristics. The microporous polymer matrix contg. the lithium cationic single-ion conducting inorg. filler is coated on a surface of a porous polymer matrix to form the composite polymer matrix multi-layer structure, which is then impregnated with the electrolyte soln., to manuf. the composite polymer electrolyte. The composite polymer electrolyte is used in a unit battery. The composite polymer matrix structure can increase mech. properties. The introduction of

the lithium cationic single-ion conducting inorg. filler can provide excellent ionic cond. and high rate discharge characteristics.

IT 7631-86-9D, Silica, sulfonated, lithium salt
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

RN 7631-86-9 HCA

CN Silica (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M002-16

INCL 429309000; X42-930.7; X42-925.1; X42-925.2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium secondary battery electrolyte inorg filler contg composite polymer

IT Polymers, uses
(co-; method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT Fillers
(inorg.; method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT Secondary batteries
(lithium; method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT Battery electrolytes
Ionic conductors
Polymer electrolytes
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT Fluoropolymers, uses
Polyamides, uses
Polyimides, uses
Polymer blends
Polyoxyalkylenes, uses

Polysulfones, uses
Polyurethanes, uses
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT Zeolites (synthetic), uses
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT Composites
(polymer electrolyte; method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT 75-77-4D, Chlorotrimethylsilane, reaction products with chlorosufonated silica, lithium salts 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 109-99-9, Thf, uses 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethylacrylate 9003-32-1, Polyethylacrylate 9003-42-3, Polyethylmethacrylate 9003-49-0, Polybutylacrylate 9003-63-8, Polybutylmethacrylate 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9, Lithium triflate 90076-65-6 162684-16-4, Lithium manganese nickel oxide
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 872-50-4, n-Methylpyrrolidone, uses
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT 7790-94-5D, Chlorosulfonic acid, reaction products with silica, lithium salts
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

IT 7631-86-9D, Silica, sulfonated, lithium salt
(method of fabrication of lithium cationic single-ion conducting inorg. filler-contg. composite polymer electrolyte for lithium secondary battery)

L66 ANSWER 2 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 142:97364 HCA Full-text
TI Preparation of a porous polymer matrix for lithium-ion batteries
IN Noh, Hwan Jin
PA Samsung SDI Co., Ltd., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

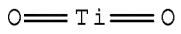
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2001047188	A	20010615	KR 1999-51293	19991118 <--

PRAI KR 1999-51293 19991118 <--
AB In this method voids are formed in a polymer matrix without extg. the plasticizer with a solvent. The method entails coating a current collector with a compn. contg. a binder, an elec. conducting agent, an electrode active material and a casting solvent to prep. pole plates; casting a polymer matrix compn. contg. an org. solvent, which does not dissolve the binder, an inorg. filler and the casting solvent which has a b.p. of 90-200°, on a support or the pole plate, followed by evapn. of the casting solvent; prepg. a battery structure by laminating or winding with positioning of the polymer matrix between the pole plates; and drying the battery structure to form voids in the polymer matrix by evapg. the org. solvent and impregnating the voids with an electrolytic soln.
IC ICM H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium ion battery polymer void electrolyte
IT Secondary batteries
(lithium; prepn. of porous polymer material for lithium-ion batteries)
IT Secondary battery separators
(prepn. of porous polymer material for lithium-ion batteries)

L66 ANSWER 3 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 142:77590 HCA Full-text
TI Electrochemical cell with curable liquid electrolyte and method of making same
IN Mclean, Gerard Francis; Legzdins, Colleen; Yu, Jianfei; Perry, Martin
PA Can.
SO U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20040258990	A1	20041223	US 2004-781196 <--	20040218
PRAI	US 2003-479788P	P	20030619 <--		

AB The invention is an electrochem. cell made of a 1st electrode, a 2nd electrode, and a curable liq. electrolyte located between the 1st and 2nd electrodes, wherein the curable liq. electrolyte is made of a protonic polymer having an polymeric backbone with side chains with acidic groups for conducting proton for an electrochem. cell, a 1st vinyl monomer with a -(COOH)- group, and a cross linking agent with a 2nd vinyl monomer.
IT 13463-67-7, Titanium oxide, uses
(magnelli phase, porous substrate; electrochem. cell with curable liq. electrolyte and method of making same)
RN 13463-67-7 HCA
CN Titanium oxide (TiO_2) (CA INDEX NAME)



IC ICM H01M008-00
ICS H01M008-10; H01M006-04; B23P019-00
INCL 429188000; 029729000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 38
ST fuel cell curable liq electrolyte polyelectrolyte injection polymn insitu; acrylic vinyl carboxy phosphate sulfonated monomer soln polyelectrolyte

crosslinking
IT Coating process
(blade, of curable electrolyte soln.; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymers, uses
(carbon-filled composites, porous substrate; electrochem. cell with curable liq. electrolyte and method of making same)
IT Epoxy resins, uses
(carbon-filled composites, substrate; electrochem. cell with curable liq. electrolyte and method of making same)
IT Vinyl compounds, uses
(carboxy-contg., polymers; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymers, uses
(carboxy-contg.; electrochem. cell with curable liq. electrolyte and method of making same)
IT Capillary tubes
(channels for input of curable electrolyte soln.; electrochem. cell with curable liq. electrolyte and method of making same)
IT Crosslinking
Crosslinking agents
Electrodes
Felts
Fuel cells
Membranes, nonbiological
Plasticizers
(electrochem. cell with curable liq. electrolyte and method of making same)
IT Polyelectrolytes
(filling cavity between electrodes; electrochem. cell with curable liq. electrolyte and method of making same)
IT Solvents
(for Nafion solns.; electrochem. cell with curable liq. electrolyte and method of making same)
IT Molding of plastics and rubbers
(injection, low-pressure, curable electrolyte soln. injection or pumping, no excess curing pressure; electrochem. cell with curable liq. electrolyte and method of making same)
IT Pipes and Tubes
(microchannels, for polyelectrolyte; electrochem. cell with curable liq. electrolyte and method of making

same)
IT Porous materials
(monoliths, substrate; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymers, uses
(phosphoric acid-group contg.; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymerization
Polymerization catalysts
(photopolymn.; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polyketones
(polyether-, sulfonated; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polyethers, uses
(polyketone-, sulfonated; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymers, uses
(polysulfonates; electrochem. cell with curable liq. electrolyte and method of making same)
IT Aerogels
Composites
Foams
Laminated materials
Mats
Paper
Screens (mesh)
(porous substrate; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymerization
(radiochem., electron bombardment or beams; electrochem. cell with curable liq. electrolyte and method of making same)
IT Porous materials
(substrate; electrochem. cell with curable liq. electrolyte and method of making same)
IT Polymerization
(thermal; electrochem. cell with curable liq. electrolyte and method of making same)
IT Monomers
(vinyl, carboxy-contg.; electrochem. cell with curable liq. electrolyte and method of making same)
IT 7440-44-0, Carbon, uses
(composites with epoxy resins or other polymers, porous substrate; electrochem. cell with curable liq. electrolyte and method of making same)

IT 77-77-0, Divinyl sulfone 7732-18-5, Water, uses
(electrochem. cell with curable liq.
electrolyte and method of making same)
IT 7664-38-2D, Phosphoric acid, vinyl-contg. derivs.
(electrochem. cell with curable liq.
electrolyte and method of making same)
IT 107-13-1, Acrylonitrile, uses
(electrochem. cell with curable liq.
electrolyte and method of making same)
IT 13463-67-7, Titanium oxide, uses
(magnelli phase, porous substrate; electrochem.
cell with curable liq. electrolyte and method of making
same)

L66 ANSWER 4 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 141:91807 HCA Full-text
TI Electrode-electrolyte laminate for
polymer electrolyte fuel cell
IN Matsubara, Takeshi; Asano, Yoichi; Iwasawa, Isamu
PA Honda Motor Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004186041	A	20040702	JP 2002-352921 <--	20021204
JP 4035431	B2	20080123		

PRAI JP 2002-352921 20021204 <--
AB The laminate has a solid polymer electrolyte layer between a pair of electrodes, a pair of gas diffusion layers on the backside of the electrodes, water vapor collecting conductive layers between the electrodes and their gas diffusion layers, and porous particles having av. pore diam. 0.3-015 nm dispersed in the water vapor collecting layers.
IT 1344-28-1, Alumina, uses 7631-86-9,
Silica, uses
(water vapor collecting conductive layer in gas diffusion
electrodes for polymer electrolyte fuel
cells)
RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)

O=Si=O

IC ICM H01M008-02
ICS H01M008-10
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Crystal whiskers
(carbon; water vapor collecting conductive layer in gas diffusion electrodes for polymer electrolyte fuel cells)
IT Fuel cell electrodes
(water vapor collecting conductive layer in gas diffusion electrodes for polymer electrolyte fuel cells)
IT Carbon black, uses
Zeolites (synthetic), uses
(water vapor collecting conductive layer in gas diffusion electrodes for polymer electrolyte fuel cells)
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(water vapor collecting conductive layer in gas diffusion electrodes for polymer electrolyte fuel cells)
IT 7440-44-0, Carbon, uses
(whiskers; water vapor collecting conductive layer in gas diffusion electrodes for polymer electrolyte fuel cells)

L66 ANSWER 5 OF 16 HCA
AN 137:143066 HCA Full-text
TI A multi-layered, UV-cured polymer electrolyte for lithium secondary battery
IN Yun, Kyung-Suk; Cho, Byung-Won; Cho, Won-Il; Kim, Hyung-Sun; Kim, Un-Sek; Rhee, Hee-Woo; Kim, Yong-Tae
PA Korea Institute of Science and Technology, S. Korea
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002061874	A1	20020808	WO 2001-KR133 <--	20010131
	W: JP, KR, US				
	US 20030180623	A1	20030925	US 2003-275383 <--	20030522
	US 7135254	B2	20061114		
PRAI	WO 2001-KR133	W	20010131 <--		

AB The present invention relates to a multi-layered , UV-cured polymer electrolyte and lithium secondary battery comprising the same, wherein the polymer electrolyte comprises: (A) a separator layer formed of polymer electrolyte, PP, PE, PVdF or non-woven fabric, wherein the separator layer having two surfaces; (B) at least one gelled polymer electrolyte layer located on at least one surface of the separator layer comprising: (a) polymer obtained by curing ethyleneglycoldi(meth)acrylate oligomer of the formula by UV irradn.: $CH_2=CR^1COO(CH_2CH_2O)_nCOCR^2=CH_2$ wherein, R1 and R2 are independently hydrogen or Me group, and n is a integer of 3-20; and (b) at least one polymer selected from the group consisting of PVdF-based polymer, PAN-based polymer, PMMA-based polymer and PVC-based polymer; and (C) org. electrolyte soln. in which lithium salt is dissolved in a solvent.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 12003-67-7, Aluminum lithium oxide allio2 13463-67-7, Titania, uses
(porous filler; multilayered, UV-cured polymer electrolyte for lithium secondary battery)

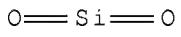
RN 1344-28-1 HCA

CN Aluminum oxide (Al_2O_3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

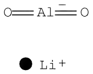
RN 7631-86-9 HCA

CN Silica (CA INDEX NAME)

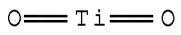


RN 12003-67-7 HCA

CN Aluminate (AlO_2^{1-}), lithium (1:1) (CA INDEX NAME)



RN   13463-67-7 HCA
CN   Titanium oxide (TiO_2) (CA INDEX NAME)



IC   ICM H01M010-40
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
ST   lithium secondary battery UV cured polymer electrolyte
IT   Secondary batteries
        (lithium; multilayered, UV-cured polymer electrolyte for lithium secondary battery)
IT   Battery electrolytes
       Polymer electrolytes
        (multilayered, UV-cured polymer electrolyte for lithium secondary battery)
IT   Coke
     Fluoropolymers, uses
     Polymer blends
        (multilayered, UV-cured polymer electrolyte for lithium secondary battery)
IT   Crosslinking
        (photochem.; multilayered, UV-cured polymer electrolyte for lithium secondary battery)
IT   Fluoropolymers, uses
       Polymers, uses
        (porous filler; multilayered, UV-cured polymer electrolyte for lithium secondary battery)
IT   Lithium alloy, base
        (multilayered, UV-cured polymer electrolyte for lithium secondary battery)
IT   102-71-6, Triethanolamine, uses   102-82-9, Tributylamine

103-83-3, n-Benzyldimethylamine 121-44-8, Triethylamine, uses
(UV curing accelerator; multilayered, UV-cured
polymer electrolyte for lithium secondary
battery)

IT 84-51-5, 2-EthylAnthraquinone 84-65-1, Anthraquinone 93-97-0, Benzoyl benzoate 119-61-9, Benzophenone, uses 120-51-4, Benzyl benzoate 131-09-9, 2-ChloroAnthraquinone 492-22-8, Thioxanthone 574-09-4, Ethyl benzoin ether 947-19-3, 1-Hydroxycyclohexyl phenyl ketone 2648-61-5 3524-62-7 5293-97-0, 2,2'-Dichlorobenzophenone 6175-45-7, 2,2-Diethoxyacetophenone 6652-28-4, Isopropyl benzoin ether 6652-29-5, Benzoin phenyl ether 7473-98-5, 2-Hydroxy-2-methyl-1-phenylpropane-1-one 7624-24-0 7727-54-0, Ammonium persulfate 24650-42-8, 2,2-Dimethoxy-2-phenylacetophenone 72896-34-5, Chlorothioxanthone 75081-21-9, Isopropyl thioxanthone
(UV curing initiator; multilayered, UV-cured
polymer electrolyte for lithium secondary
battery)

IT 7440-44-0, Carbon, uses
(hard; multilayered, UV-cured polymer
electrolyte for lithium secondary battery)

IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1314-62-1, Vanadium pentoxide, uses 1332-29-2, Tin oxide 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-00-3, Acrylonitrile-vinyl chloride copolymer 9003-07-0, Polypropylene 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Kynar 2801 9056-77-3, Poly(ethylene glycol methacrylate) 12031-65-1, Lithium nickel oxide linio2 12037-42-2, Vanadium oxide v6o13 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-15-1, Methacrylic acid-methyl methacrylate copolymer 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 162004-08-2, Cobalt lithium nickel oxide colinio2
(multilayered, UV-cured polymer
electrolyte for lithium secondary battery)

IT 554-13-2 1304-28-5, Baria, uses 1309-48-4, Magnesia, uses

1310-65-2, Lithium hydroxide (Li(OH)) 1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses 7631-86-9
, Silica, uses 7789-24-4, Lithium fluoride, uses
9002-84-0, Ptfe 12003-67-7, Aluminum lithium
oxide allio2 12047-27-7, Barium titanium
oxide batio3, uses 12057-24-8, Lithia, uses
13463-67-7, Titania, uses 26134-62-3, Lithium
nitride (Li3N)
(porous filler; multilayered, UV-cured
polymer electrolyte for lithium secondary
battery)

RE

(1) Kist; KR1020000003091 A 2000
(2) Kist; KR1020000003092 A 2000
(3) Matsushita Electric Ind Co Ltd; JP 02-144860 A 1990 HCA
(4) Matsushita Electric Ind Co Ltd; JP 11-054154 A 1999 HCA
(5) Polystor Corporation; US 05783333 A 1998 HCA
(6) Sanyo Electric Co Ltd; JP 06-333597 A 1994 HCA
(7) Sharp Kabushiki Kaisha; US 06040092 A 2000 HCA

L66 ANSWER 6 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 136:201311 HCA Full-text
TI Multicomponent composite film and method for preparing the same
IN Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee, Sang-Young; Song, Heon-Sik; Park, Soon-Yong; Kyung, You-Jin; Ahn, Byeong-In
PA LG Chemical Co., Ltd., S. Korea
SO PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002015299	A1	20020221	WO 2001-KR1374 <--	20010811
	W: CN, JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	KR 2002071203	A	20020912	KR 2001-11191 <--	20010305
	EP 1310005	A1	20030514	EP 2001-958588	

200108
11
<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, FI, CY, TR

	JP 2004506542	T	20040304	JP 2002-520328 200108 11 <--
	JP 3885100	B2	20070221	
	CN 1258234	C	20060531	CN 2001-802389 200108 11 <--
	US 20020187401	A1	20021212	US 2002-110047 200204 05 <--
	JP 2006289985	A	20061026	JP 2006-135816 200605 15 <--
PRAI	KR 2000-46735	A	20000812	<--
	KR 2001-11191	A	20010305	<--
	JP 2002-520328	A3	20010811	<--
	WO 2001-KR1374	W	20010811	<--

AB The present invention provides a multi-component composite film comprising (a) polymer support layer (e.g., polypropylene); and (b) porous gelable polymer layer (e.g., polyvinylidene fluoride) which is formed on one side or both sides of the support layer of (a), wherein the support film of (a) and the gelable polymer layer of (b) are unified without the interface, a method for prepg. the same, and a polymer electrolyte system applied the same.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
(multicomponent composite film and method for prepg. the same)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)

O=Si=O

RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (CA INDEX NAME)

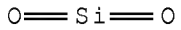
O═Ti═O

IC ICM H01M002-16
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
ST multicomponent composite polymer film electrolyte
IT Fuel cells
Polymer electrolytes
Primary batteries
Secondary batteries
Sensors
(multicomponent composite film and method for prepg. the same)
IT 556-65-0, Lithium thiocyanate LiSCN 1303-86-2, Boron oxide B2O3, uses 1309-48-4, Magnesium oxide (MgO), uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate LiClO4 13463-67-7, Titania, uses 14283-07-9, Lithium tetrafluoroborate LiBF4 29935-35-1, Lithium hexafluoroarsenate LiAsF6 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6
(multicomponent composite film and method for prepg. the same)
RE
(1) Bell Communications Research Inc; US 5418091 A 1995 HCA
(2) Celgard Llc Chariotte; EP 933824 A2 1999 HCA
(3) Motorola Inc; US 5631103 A 1997 HCA
(4) Motorola Inc; US 5639573 A 1997 HCA
(5) Motorola Inc; US 5716421 A 1998 HCA
(6) Motorola Inc; US 5849433 A 1998 HCA

L66 ANSWER 7 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 136:153908 HCA Full-text
TI Secondary polymer electrolyte lithium battery
IN Morikawa, Takamoto; Eda, Nobuo
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI   JP 2002042872   A   20020208   JP 2000-230576
                                                                200007
                                                                31
                                                  <--
PRAI JP 2000-230576   20000731 <--
AB   The battery has a polymer gel
      electrolyte contg. a polyacrylonitrile anode side film, which becomes
      a gel when absorbed a nonaq. electrolyte soln., and a microporous
      polyolefin cathode side. The polyacrylonitrile film may contain
      powd. SiO_2 or Al_2O_3 inorg. filler.
IT   1344-28-1, Alumina, uses 7631-86-9,
      Silica, uses
         (additives in electrolytes contg. gelled acrylonitrile
         polymer layer and porous polyolefin
         layer for secondary lithium batteries)
RN   1344-28-1 HCA
CN   Aluminum oxide (Al_2O_3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN   7631-86-9 HCA
CN   Silica (CA INDEX NAME)



IC   ICM H01M010-40
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST   secondary lithium battery laminated gel
      polymer electrolyte; polyacrylonitrile polyolefin
      gel electrolyte laminate lithium battery
IT   Battery electrolytes
         (electrolytes contg. gelled acrylonitrile polymer
         layer and porous polyolefin layer for
         secondary lithium batteries)
IT   Polyolefins
         (laminated polymer electrolytes
         contg. porous polyolefin cathode side for secondary
         lithium batteries)
IT   1344-28-1, Alumina, uses 7631-86-9,
      Silica, uses
         (additives in electrolytes contg. gelled acrylonitrile
         polymer layer and porous polyolefin
         layer for secondary lithium batteries)
IT   1310-65-2, Lithium hydroxide
         (electrolytes contg. gelled acrylonitrile polymer

layer and porous polyolefin layer for
secondary lithium batteries)

IT 25749-57-9, Acrylonitrile-methacrylic acid copolymer
(laminated polymer electrolytes
contg. gelled acrylonitrile polymer anode side for secondary
lithium batteries)

IT 9002-88-4, Polyethylene
(laminated polymer electrolytes
contg. porous polyolefin cathode side for secondary
lithium batteries)

L66 ANSWER 8 OF 16 HCA COPYRIGHT 2008 ACS on STN

AN 136:137415 HCA Full-text

TI Secondary polymer electrolyte lithium
battery

IN Eda, Nobuo; Matsui, Toru

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002033128	A	20020131	JP 2000-215522	20000717 <--
PRAI	JP 2000-215522		20000717 <--		

AB The battery has a gelled polymer electrolyte between a cathode and an anode in a battery case, where the electrolyte layer has a microporous polyolefin film facing the cathode, and a dispersed SiO_2 contg. poly(vinylidene fluoride) film, which becomes a gel by absorbing a nonaq. electrolyte soln., facing the anode.

IT 7631-86-9, Silica, uses
(gel polymer electrolyte laminates
contg. silica dispersed vinylene fluoride based polymer
sheet for secondary lithium batteries)

RN 7631-86-9 HCA

CN Silica (CA INDEX NAME)

$O=Si=O$

IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium battery gel polymer electrolyte laminate; polyvinylidene fluoride silica gel polymer electrolyte lithium battery; polyolefin polyvinylidene fluoride laminate lithium battery electrolyte
IT Battery electrolytes
(structure of gel polymer electrolyte laminates for secondary lithium batteries)
IT 9002-88-4, Polyethylene
(gel polymer electrolyte laminates contg. polyolefin film on cathode side for secondary lithium batteries)
IT 7631-86-9, Silica, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
(gel polymer electrolyte laminates contg. silica dispersed vinylene fluoride based polymer sheet for secondary lithium batteries)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate
(structure of gel polymer electrolyte laminates for secondary lithium batteries)

L66 ANSWER 9 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 136:9101 HCA Full-text
TI Fabrication method for lithium secondary battery with polymer electrolyte prepared by spray method
IN Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim, Hyung Sun; Kim, Un Seok
PA Korea Institute of Science and Technology, S. Korea
SO PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001091222	A1	20011129	WO 2000-KR515	20000522 <--

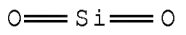
W: JP, KR, US
PRAI WO 2000-KR515 20000522 <--
AB The present invention provides a lithium secondary battery and its fabrication method. More particularly, the present invention

provides a lithium secondary battery comprising a porous polymer electrolyte and its fabrication method, wherein the polymer electrolyte is fabricated by the following process: (a) dissolving at least one polymer with plasticizers and org. electrolyte solvents to obtain at least one polymeric electrolyte soln.; (b) adding the obtained polymeric electrolyte soln. to a barrel of a spray machine, and (c) spraying the polymeric electrolyte soln. onto a substrate using a nozzle to form a porous polymer electrolyte film. The lithium secondary battery of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with org. electrolytes of a lithium secondary battery.

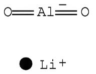
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 12003-67-7, Aluminum lithium oxide allio2 13463-67-7, Titania, uses
(filling agent; fabrication method for lithium secondary battery with polymer electrolyte prepd. by spray method)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

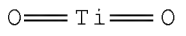
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)



RN 12003-67-7 HCA
CN Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME)



RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (CA INDEX NAME)



IC   ICM H01M010-38
CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
ST   polymer electrolyte lithium secondary
     battery; spray method fabrication polymer
     electrolyte lithium secondary battery
IT   Inductance
        (electrostatic, spray method; fabrication method for lithium
        secondary battery with polymer
        electrolyte prepd. by spray method)
IT   Battery electrolytes
       Lamination
     Plasticizers
       Polymer electrolytes
        (fabrication method for lithium secondary battery with
        polymer electrolyte prepd. by spray method)
IT   Fluoropolymers, uses
     Polyoxyalkylenes, uses
        (fabrication method for lithium secondary battery with
        polymer electrolyte prepd. by spray method)
IT   Fluoropolymers, uses
        (filling agent; fabrication method for lithium secondary
        battery with polymer electrolyte
        prepd. by spray method)
IT   Secondary batteries
        (lithium; fabrication method for lithium secondary
        battery with polymer electrolyte
        prepd. by spray method)
IT   Alcohols, uses
        (plasticizer; fabrication method for lithium secondary
        battery with polymer electrolyte
        prepd. by spray method)
IT   Coating process
        (spray; fabrication method for lithium secondary battery
        with polymer electrolyte prepd. by spray
        method)
IT   79-20-9, Methyl acetate   105-37-3, Ethyl propionate   109-99-9,
     Thf, uses   141-78-6, Ethyl acetate, uses   554-12-1, Methyl
     propionate   7782-42-5, Graphite, uses   7791-03-9, Lithium
     perchlorate   9002-86-2, Pvc   9002-88-4, Polyethylene   9003-07-0,
     Polypropylene   9003-20-7, Polyvinyl acetate   9004-34-6, Cellulose,
     uses   9004-35-7, Cellulose acetate   9004-36-8   9004-39-1,
     Cellulose acetate propionate   9010-76-8, Acrylonitrile-vinylidene
     chloride copolymer   9010-88-2, Ethyl acrylate-methylmethacrylate
     copolymer   9011-14-7, Pmma   9011-17-0, Hexafluoropropylene-

vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 24968-79-4, Acrylonitrile-methyl acrylate copolymer 24980-34-5, Polyethylenesulfide 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinyl pyrrolidone copolymer 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25667-11-2, Polyethylenesuccinate 26913-06-4, Poly[imino(1,2-ethanediyl)] 28726-47-8, Poly(oxymethylene-oxyethylene) 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 98973-15-0, Poly[bis(2-(2-methoxyethoxyethoxy))-phosphazene]
(fabrication method for lithium secondary battery with polymer electrolyte prepd. by spray method)

IT 554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses 1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide 1313-59-3, Sodium oxide, uses 1344-28-1, Alumina , uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3, Lithium nitride
(filling agent; fabrication method for lithium secondary battery with polymer electrolyte prepd. by spray method)

IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 80-73-9, 1,3-Dimethyl-2-imidazolidinone 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 127-19-5, n,n-Dimethyl acetamide 143-24-8, Tetraethylene glycol dimethyl ether 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 872-50-4, n-Methyl-2-pyrrolidone, uses 4437-85-8, Butylene carbonate 26101-52-0
(plasticizer; fabrication method for lithium secondary battery with polymer electrolyte prepd. by spray method)

RE
(1) Asahi Chem Ind Co Ltd; JP A03038226 1991
(2) Celanese Corporation; US A3925525 1975
(3) Fuji Photo Film Co Ltd; JP B108250100 1996
(4) Matsushita Electric Ind Co Ltd; US A5525443 1996
(5) Mitsubishi Rayon Co Ltd; JP A60252716 1985
(6) Nec Corp; JP A12082498 2000
(7) Tokyo Shibaura Electric Co Toshiba Battery; EP A20398689 1990
(8) Toshiba Battery Co Ltd; JP A09022724 1997
(9) Toshiba Battery Co Ltd; JP A10208775 1998
(10) Us Army; US A4812375 1989

L66 ANSWER 10 OF 16 HCA COPYRIGHT 2008 ACS on STN

AN 135:7785 HCA Full-text

TI Methods of preparing electrochemical cells

IN Carlson, Steven A.; Person, Patricia C.

PA Moltech Corporation, USA

SO PCT Int. Appl., 103 pp.
CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001039294	A2	20010531	WO 2000-US32233	20001121 <--
	WO 2001039294	A3	20020110		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	AU 2001017966	A	20010604	AU 2001-17966	20001121 <--
	US 7081142	B1	20060725	US 2002-148151	20020930 <--
PRAI	US 1999-167149P	P	19991123 <--		
	US 1999-167150P	P	19991123 <--		
	WO 2000-US32233	W	20001121 <--		

AB Provided are methods of prepg. a cathode/separator assembly for use in electrochem. cells in which a protective coating layer is coated on a temporary carrier substrate, a microporous separator layer is then coated on the protective coating layer, and a cathode is then coated or laminated on the separator layer, prior to removing the temporary carrier substrate from the protective coating layer. Also, provided are methods of prepg. electrochem. cells utilizing

cathode/separator assemblies prepd. by such methods, and
cathode/separator assemblies and electrochem. cells prepd. by such
methods.

IT 1344-28-1, Aluminum oxide, uses
7631-86-9, Silicon oxide, uses
13463-67-7, Titanium oxide, uses
(methods of prepg. electrochem. cells)

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)

O═Si═O

RN 13463-67-7 HCA
CN Titanium oxide (TiO2) (CA INDEX NAME)

O═Ti═O

IC ICM H01M002-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cathode separator assembly
IT Chalcogenides
(metal; methods of prepg. electrochem. cells)
IT Battery cathodes
Coating materials
Conducting polymers
Polymer electrolytes
Primary batteries
Primary battery separators
Secondary batteries
Secondary battery separators
Xerogels
(methods of prepg. electrochem. cells)
IT Acrylic polymers, uses
Polyesters, uses
(methods of prepg. electrochem. cells)
IT Porous materials
(microporous; methods of prepg. electrochem.
cells)

IT Hydrocarbons, uses
(polymers; methods of prepg. electrochem. cells
)

IT Paper
(substrate; methods of prepg. electrochem.
cells)

IT Metals, uses
Polymers, uses
(substrate; methods of prepg. electrochem.
cells)

IT Polymers, uses
(sulfonated; methods of prepg. electrochem.
cells)

IT 7429-90-5, Aluminum, uses
(carbon-coated; methods of prepg. electrochem.
cells)

IT 110-71-4 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses
7440-44-0D, Carbon, lithium-intercalated, uses 7704-34-9, Sulfur,
uses 12798-95-7 14283-07-9, Lithium tetrafluoroborate
33154-17-5, Poly(ethylene glycol) vinyl ether 39448-96-9, Graphite
lithium 53680-59-4
(methods of prepg. electrochem. cells)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 11114-17-3,
fluorad fc 430 25086-89-9, luviskol VA55E 122525-99-9, Zonyl
FSO-100
(methods of prepg. electrochem. cells)

IT 32535-84-5P, Ammonium zirconyl carbonate
(methods of prepg. electrochem. cells)

IT 1314-23-4, Zirconium oxide, uses 1318-23-6, Pseudoboehmite
1332-29-2, Tin oxide 1344-28-1, Aluminum
oxide, uses 2695-37-6, Sodium styrene-4-sulfonate
7631-86-9, Silicon oxide, uses
9002-89-5, Polyvinyl alcohol 9003-53-6D, Polystyrene, sulfonated
13463-67-7, Titanium oxide, uses
25038-59-9, Polyethylene terephthalate, uses 115672-18-9, Lithium
sulfide (Li2(S8))
(methods of prepg. electrochem. cells)

L66 ANSWER 11 OF 16 HCA COPYRIGHT 2008 ACS on STN

AN 134:134099 HCA Full-text

TI Laminate polymer electrolyte membranes
and manufacture of the membranes and lithium batteries
using the membranes

IN Guo, Chuntai

PA TCL Jinneng Battery Co., Ltd., Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 14 pp.
CODEN: CNXXEV

DT Patent
LA Chinese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1259773	A	20000712	CN 1999-117804	19990814 <--

PRAI CN 1999-117804 19990814 <--

AB The electrolyte membranes have a microporous polypropylene or polyethylene film between nonporous poly(vinylidene fluoride), poly(vinylidene fluorid)-(2-15)% polyacrylonitrile mixt., or poly(vinylidene fluoride))-(2-15)% polyacrylonitrile-(26-30)% polyhexafluoropropylene mixt. surface layers, where the surface layer may also contain 5-35% AL_2O_3 or SiO_2. The electrolyte membranes are prepd. by dissolving the polymer(s) in Me_2CO, Me_2CO-10% BuOH, or N-methylpyrrolidone; adding Al_2O_3 or SiO_2 to the mixt. and holding in a closed environment for ≤24 h to form a gel, applying the gel on both side of the microporous polypropylene or polyethylene film forming a wet membrane, extg. the solvent from the laminate, and injecting electrolyte soln. in the membrane. The batteries are prepd. by attaching electrodes on the opposite sides of the wet membrane, extg. the solvent, drying in vacuum at 60°, injecting a 1M $LiPF_6$/(1:1) ethylene carbonate-dimethyl carbonate electrolyte soln, and sealing in a plastic-metal laminate package.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(structure and manuf. of laminate polymer electrolyte membranes for secondary lithium batteries)

RN 1344-28-1 HCA
CN Aluminum oxide (Al_2O_3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCA
CN Silica (CA INDEX NAME)

O=Si=O

IC H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery laminate polymer electrolyte compn manuf

IT Secondary batteries
(lithium; structure and manuf. of laminate polymer electrolyte membranes for secondary lithium batteries)
IT Battery electrolytes
(structure and manuf. of laminate polymer electrolyte membranes for secondary lithium batteries)
IT Fluoropolymers, uses
(structure and manuf. of laminate polymer electrolyte membranes for secondary lithium batteries)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 9002-88-4, Polyethylene 9003-07-0, Polypropylene 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile 25120-07-4, Polyhexafluoropropylene
(structure and manuf. of laminate polymer electrolyte membranes for secondary lithium batteries)

L66 ANSWER 12 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 131:325055 HCA Full-text
TI Secondary batteries containing spacers and their manufacture
IN Hiroi, Osamu; Yoshida, Ikuhiro; Hamano, Hiroshi
PA Mitsubishi Electric Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11307124	A	19991105	JP 1998-108029 <--	19980417

PRAI JP 1998-108029 19980417 <--
AB The title batteries are equipped with ion-conducting layers contg. non-flowing ion-conducting compns. and spacer particles between cathodes and anodes, where the spacer particles control distances between cathode mass layers and anode mass layers. The batteries are manufd. by forming porous active mass layers on current collectors to give cathodes and anodes, coating electrolyte solns. contg. monomers

and spacer particles on ≥1 of active mass surfaces, laminating the cathodes and anodes, and then polymg. The separator-free batteries have controlled distances between the electrodes and are prevented from electrolyte leakage.

IT 1344-28-1, Aluminum oxide (Al_2O_3), uses
(spacers; secondary batteries manufd. by polymg. electrolyte layers with spacers)

RN 1344-28-1 HCA

CN Aluminum oxide (Al_2O_3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM H01M010-40
ICS H01M010-40; H01M004-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST spacer polymer electrolyte battery manuf; polymn ion conducting electrolyte spacer battery

IT Secondary batteries
(lithium; secondary batteries manufd. by polymg. electrolyte layers with spacers)

IT Battery electrolytes
Polymer electrolytes
(secondary batteries manufd. by polymg. electrolyte layers with spacers)

IT 248927-79-9P
(gel electrolytes; secondary batteries manufd. by polymg. electrolyte layers with spacers)

IT 1344-28-1, Aluminum oxide (Al_2O_3), uses
(spacers; secondary batteries manufd. by polymg. electrolyte layers with spacers)

L66 ANSWER 13 OF 16 HCA COPYRIGHT 2008 ACS on STN

AN 130:184886 HCA Full-text

TI Lithium batteries with solid electrolytes consisting of nonconducting porous polymer film filled with lithium ionic conductors

IN Kamino, Maruo; Fujimoto, Masahisa; Noma, Toshiyuki; Nishio, Koji

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

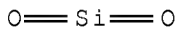
PI JP 11045725 A 19990216 JP 1997-215598 19970725 <--
PRAI JP 1997-215598 19970725 <--

AB The solid electrolyte comprises nonconducting porous polymer film, having its pores filled with 20-65 wt.% (based on the total of polymer film and inorg. electrolyte) Li ion-conducting inorg. electrolytes. Batteries with large discharge capacity and high discharge rate are obtained. Polyethylene was blended with liq. paraffin and $LiTi_2(PO_4)_3$, formed into a sheet, and treated with methylene chloride for elution of paraffin to give a porous sheet. The pore of the prepd. sheet was laminated on cathode and impregnated with polyethylene glycol methacrylate-$LiClO_4$ and irradiated with electron beam to give a polymer electrolyte. A battery obtained using the electrolyte showed excellent discharging characteristics.

IT 7631-86-9, Silica, uses
(solid electrolyte; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors)

RN 7631-86-9 HCA

CN Silica (CA INDEX NAME)



IC ICM H01M006-18
ICS H01M006-18; C08J009-00; H01M010-40; C08K003-16; C08K003-22; C08K003-28; C08K003-30; C08K003-32; C08K003-34; C08K003-38; C08L101-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium battery solid electrolyte; nonconducting polymer inorg conductor filler electrolyte

IT Porous materials
(films, polymer; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Battery electrolytes
(lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Ionic conductors
(lithium; lithium battery electrolytes comprising

nonconducting porous polymer films
filled with Li ionic conductors)

IT Acrylic polymers, uses
Fluoropolymers, uses
Polyesters, uses
Polyolefins
(nonconducting polymer film; lithium battery
electrolytes comprising nonconducting porous
polymer films filled with Li ionic conductors)

IT Films
(porous, polymer; lithium battery
electrolytes comprising nonconducting porous
polymer films filled with Li ionic conductors)

IT Polymer electrolytes
(solid electrolyte; lithium battery
electrolytes comprising nonconducting porous
polymer films filled with Li ionic conductors)

IT 7439-93-2D, Lithium, polyethylene glycol methacrylate complexes,
uses 9056-77-3D, Polyethylene glycol methacrylate, lithium
complexes
(Li ionic conductor; lithium battery electrolytes
comprising nonconducting porous polymer
films filled with Li ionic conductors)

IT 9002-88-4, Polyethylene
(nonconducting polymer film; lithium battery
electrolytes comprising nonconducting porous
polymer films filled with Li ionic conductors)

IT 1303-86-2, Boria, uses 1310-65-2, Lithium hydroxide 1314-34-7,
Vanadium oxide (V2O3) 1314-56-3, Phosphorus oxide (P2O5), uses
7631-86-9, Silica, uses 10377-51-2, Lithium
iodide 12007-33-9, Boron sulfide (B2S3) 12031-66-2, Lithium
tantalum oxide (LiTaO3) 12057-24-8, Lithium oxide (Li2O), uses
12136-58-2, Lithium sulfide (Li2S) 26134-62-3, Trilithium nitride
30622-39-0, Lithium titanium phosphate (LiTi2(PO4)3) 37220-89-6,
Lithium β-alumina
(solid electrolyte; lithium battery electrolytes
comprising nonconducting porous polymer
films filled with Li ionic conductors)

L66 ANSWER 14 OF 16 HCA

AN 129:233092 HCA Full-text

OREF 129:47371a,47374a

TI Laminated lithium-ion battery and its
manufacture

IN Bauerlein, Peter; Oberhauser, Johanna; Praas, Hans-walter; Schomann,
Hermann

PA Varta Batterie A.-G., Germany; Varta Microbattery GmbH

SO Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 865091	A2	19980916	EP 1998-102041	19980206 <--
	EP 865091	A3	20040218		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 19709783	A1	19980917	DE 1997-19709783	19970310 <--
	CA 2231482	A1	19980910	CA 1998-2231482	19980306 <--
	JP 10255850	A	19980925	JP 1998-56711	19980309 <--
	CN 1197301	A	19981028	CN 1998-107072	19980309 <--
	US 6103416	A	20000815	US 1998-37030	19980309 <--

PRAI DE 1997-19709783 A 19970310 <--
AB The battery made of flexible layers comprises an anode of Li, a Li alloy, or a metal fleece or foam contg. active mass of Li-intercalated material such as C, graphite, WO_2, TiO_2, TiS_2, MoO_2, or V_2O_5; a separator of a nonaq. electrolyte -contg. porous polymer; and a cathode of lithiated MnO_2, Mn spinel, Li metal oxide, mixed oxides, or sulfides.
IC ICM H01M010-40
ICS H01M004-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium ion battery laminated manuf
IT Secondary batteries

(lithium, lithium-ion; laminated and its manuf.)
IT Polyoxyalkylenes, uses
(lithium-ion battery anode coated with suspension contg.)
IT Fluoropolymers, uses
(separator of laminated lithium-ion battery)
IT 12162-79-7, Lithium manganese oxide ($LiMnO_2$)
(cathode of laminated lithium-ion battery)
IT 96-49-1, Ethylene carbonate 25322-68-3, PEO
(lithium-ion battery anode coated with suspension contg.)
IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, PVDF
(separator of laminated lithium-ion battery)

L66 ANSWER 15 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN 123:88325 HCA Full-text
OREF 123:15693a,15696a
TI Fabrication of electrode/electrolyte layer with novel microstructure using artificial pore former
AU Moon, J. W.; Lee, H. W.; Kang, H. G.; Kim, J. D.; Kim, G. D.; Lee, H. L.
CS Ceramic Process. Cent., Korea Inst. Sci. Technol., Seoul, S. Korea
SO Proceedings - Electrochemical Society (1995), 95-1(Solid Oxide Fuel Cells (SOFC-IV)), 282-91
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB Hollow polymer spheres were successfully introduced to form porous electrode layers for SOFC unit cell fabrication. In the presence of extreme differences in size and d. between pore precursor and ceramic particles, hindered settling and bimodal packing behavior were actively utilized in order to produce homogeneous green tapes. There were two prominent transitions. The one was close-to-open pore transition near 40-50 vol.% pore precursor addn. while the other was formation of continuous network by pore precursor particles at 60-70 vol.% addn. By properly manipulating pore precursor/ceramic powder ratio and by carefully prepd. slurry, bi- and tri-layer composite cells were successfully fabricated without evident defects using tape casting/ lamination/co-firing techniques.
IT 1344-28-1, Alumina, uses
(polymer pore former use in fabrication of electrode/electrolyte layer with novel microstructure for solid oxide fuel cells)
RN 1344-28-1 HCA
CN Aluminum oxide (Al_2O_3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC   52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT   Fuel-cell electrolytes
     Pore
        (polymer pore former use in fabrication of
        electrode/electrolyte layer with novel microstructure for solid
        oxide fuel cells)
IT   1313-99-1, Nickel oxide, uses   1314-23-4, YSZ, uses   1314-36-9,
     YSZ, uses 1344-28-1, Alumina, uses   64417-98-7,
     YSZ   110781-51-6, Lanthanum manganese strontium oxide
     (la0.9mnsr0.1o3)
        (polymer pore former use in fabrication of electrode/electrolyte
        layer with novel microstructure for solid oxide fuel cells)

L66 ANSWER 16 OF 16 HCA COPYRIGHT 2008 ACS on STN
AN   106:199245 HCA Full-text
OREF 106:32273a,32276a
TI   Laminar lithium battery
IN   Nagai, Tatsu; Matsumoto, Kazunobu; Kitagawa, Satoshi; Kajita, Kozo;
     Manabe, Toshikatsu
PA   Hitachi Maxell, Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 7 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62022376	A	19870130	JP 1985-162255	19850722 <--

PRAI JP 1985-162255   19850722 <--
AB   A mixt. of a Li salt and a polymer contg. a lactone structure is used as an electrolyte for a laminar Li battery. A soln. of 22.4 g LiBPh4.3MeOC2H4OMe in 40 mL γ-butyrolactone was mixed with 11.86 g poly(3-vinyl-1,4-butyrolactone) (av. mol. wt. 7,000), sealed, and heated at 120° for 1 h to obtain a viscous electrolyte with an ionic cond. of 1 + 10-3 S/cm at 25°. A 30:70 (vol.) mixt. of this electrolyte and TiS2 was screen printed on a stainless steel plate to form a 0.1 mm-thick cathode layer with a polypropylene frame formed on the plate. A 25-μ corrugated porous polypropylene separator impregnated with the electrolyte and a Li-Al anode were laid on top of the cathode successively, and a stainless steel anode collector plate was sealed to the frame via a modified polyolefin hot-melt binder to obtain a battery. No leaking or spreading of the

electrolyte was obsd. during assembly. This battery had a cycle life much longer than a battery using an electrolyte without the polymer.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium tetraphenylborate polyvinyl butyrolactone electrolyte; battery lithium salt polylactone electrolyte

IT Batteries, secondary
(lithium-titanium oxide, electrolytes from lithium tetraphenylborate-dimethoxyethane adduct and polylactones for)

IT 63502-32-9 108232-09-3 108232-35-5 108232-36-6
(electrolytes, contg. lithium tetraphenylborate-dimethoxyethane adduct, for laminar lithium batteries)

IT 75965-35-4
(electrolytes, contg. polylactones, for laminar lithium batteries)